

PATENT ABSTRACTS OF JAPAN

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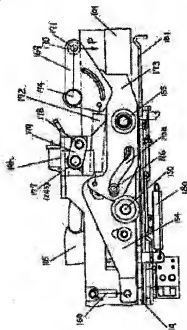
AGARI HIDEO

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(54) CASSETTE HOLDER DEVICE



57)Abstract:

PROBLEM TO BE SOLVED: To provide a cassette holder which is enabled to surely apply strong pressure to a member for determining height of a large size cassette even for a large size cassette, or a device for using a mixture of small size cassettes and large size cassettes.

SOLUTION: A holder 119 is constituted of a turnable auxiliary pressure board 173, and an auxiliary pressure plate which is further supported turnably by the auxiliary pressure board 173. The auxiliary pressure board 173 is turned by a driving member, an auxiliary pressure roller 170 is estranged from a cassette pressure roller 245, the back face side of the cassette is pressed, and pressure force is made to surely work.

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS**[Claim(s)]**

[Claim 1] A cassette carrier which it shows to the 2nd position in which record reproduction is possible from the 1st position that can take out a cassette, The 1st cassette presser-foot mechanism that carries out press holding of said cassette to said cassette carrier in said 1st position, and welds said cassette by pressure to height determining part material in said 2nd position, A cassette holder device which has the 2nd cassette presser-foot mechanism that welds said cassette by pressure to said height determining part material in a position near [mechanism / said / 1st / cassette presser-foot] a back part of said cassette.

[Claim 2] A cassette carrier which is a cassette holder device with which it can equip selectively, and shows a small cassette and a large-sized cassette to the 2nd position in which record reproduction is possible from the 1st position that can take out said large-sized cassette and a small cassette, The 1st cassette presser-foot mechanism that carries out press holding of said large-sized cassette and said small cassette to said cassette carrier in said 1st position, and welds by pressure said large-sized cassette and said small cassette to height determining part material in said 2nd position, It is held at a position which approached said 1st cassette presser-foot mechanism in said 1st position, and estranges from said 1st cassette presser-foot mechanism in said 2nd position. A cassette holder device which has the 2nd cassette presser-foot mechanism that welds said large-sized cassette by pressure to said height determining part material in a position near a back part of said large-sized cassette.

[Claim 3] It is a cassette holder device which can equip with a small cassette and a large-sized cassette selectively, A cassette carrier which carries out vertical migration to horizontal migration to the 2nd position in which record reproduction is possible and which is guided from the 1st position that can take out said large-sized cassette and a small cassette, A driving member which moves only horizontally while this cassette carrier moves to said 2nd position from said 1st position, The 1st cassette presser-foot mechanism that carries out press holding of said small cassette and the large-sized cassette to said cassette carrier in said 1st position, and welds by pressure said small cassette and a large-sized cassette to height determining part material in said 2nd position, It is supported by said cassette carrier, enabling free rotation, and engages with said driving member. It is held at a position which approached said 1st cassette presser-foot mechanism in said 1st position, and said large-sized cassette is estranged from said 1st cassette presser-foot mechanism in said 2nd position. A cassette holder device which has the 2nd cassette presser-foot mechanism welded by pressure to said height determining part material in a position near a back part of said large-sized cassette.

[Claim 4] An auxiliary presser-foot board with which said 2nd cassette presser-foot mechanism was supported by said cassette carrier enabling free rotation, The cassette holder device according to claim 3 which consisted of an auxiliary presser-foot board which has an auxiliary presser-foot member and was supported by this auxiliary presser-foot board enabling free rotation, and a rotation center of said auxiliary presser-foot member and said auxiliary presser-foot board made the almost same height in said 2nd position.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the cassette holder device which shows the tape cassette used for a recording and reproducing device etc. to the position in which record reproduction is possible.

[0002]

[Description of the Prior Art] In the device which uses selectively several cassettes by which cassette sizes differ, reservation of the suitable grip cost of the user at the time of cassette extraction poses a problem by considering the difference of the size of a large-sized cassette and a small cassette, especially the difference of a depth direction as a reason. If it sets up to secure sufficient grip cost for a small cassette, a cassette holder must be moved to the position which approached the cassette insertion mouth more. If it does so, the cassette presser-foot mechanism which presses the cassette upper surface provided in a cassette holder will be limited to a near position by the front face cover of a cassette. The digital video cassette which is already standardized as an example and is also following commercialization is explained. There is a top view which has arranged in piles the cassette of two kinds of size standardized by drawing 27 as a digital video cassette (following only cassette) in the position in which record reproduction is possible. If the large-sized cassette (L cassette) 1 and the small cassette (S cassette) 31 are positioned by the tooling holes 3e, 3f, 33e, and 33f, they will serve as arrangement like drawing 27. Although the openings 3p and 33p into which a mailbox etc. can advance become the same position, reel positions differ, respectively. Thus, positioning with the recording and reproducing device of the cassette by which sizes differ consists of a gage pin provided in the tooling holes 3e, 3f, 33e, and 33f, and a height arrangement focus which supports height in addition to this. The hatching 3i and 33i shown in drawing 26 shows the field which can arrange a height arrangement pin. Positioning of this cassette is made by the S cassette 31 and the L cassette 1 being firmly pressed from the cassette upper surface. The cassette presser foot is provided in the electrode holder which generally holds and takes out a cassette and is conveyed in a record reproduction possible position from a position. If a cassette is inserted in an electrode holder, it will be energized by this cassette presser-foot member to an electrode holder, and the cassette will be held by that energizing force.

It is the same also with the device handling two or more cassettes. Therefore, the position of the cassette presser foot turns into a common position of a size cassette. Considering the time of being positioned by the last record reproduction position, the position of the cassette presser foot becomes between 33 f of tooling holes of drawing 26, and the hatching portions 33i. However, when the sizes of a cassette differ this much, the position of the cassette presser foot may be optimal position by the S cassette 31, but in the L cassette 1, 3 f of tooling holes are approached too much, and the energizing force over the height arrangement pin of the hatching portions 3i becomes weak. Then, although the mechanism who moves the position of a cassette presser foot back at the time of cassette positioning is also proposed, Although it is possible by an independent cassette **** mechanism, it is dramatically difficult to choose whether in the mechanism handling two or more cassettes, the classification of a cassette is detected and a cassette presser-foot mechanism is back moved by the classification, or a position as it is maintained.

[0003]

[Problem(s) to be Solved by the Invention] The 1st SUBJECT for this invention to aim at solution is the point that the conventional cassette holder device cannot energize a cassette with such large size to a positioning member firmly. The 1st purpose of this invention is accomplished in order to solve the above-mentioned problem, and it provides the cassette holder device which energizes a cassette to a positioning member firmly in a record reproduction position.

[0004] The 2nd SUBJECT for this invention to aim at solution is the point that energizing force sufficient by a large-sized cassette cannot be acquired even if it can acquire the energizing force optimal by a small cassette in the device with which the conventional cassette holder device uses two or more cassettes selectively. The 2nd purpose of this invention is accomplished in order to solve the above-mentioned problem, and it provides the cassette holder device with which the optimal energizing force for each cassette is acquired. The 3rd SUBJECT for this invention to aim at solution is the point that the cassette presser-foot mechanism which takes out required thrust with the cassette of ***** was not able to be proposed as a rational means, when the conventional cassette holder device makes it equip

with the cassette by which sizes differ selectively. The 3rd purpose of this invention is accomplished in order to solve the above-mentioned problem, and it provides the cassette holder device provided with the rational cassette presser-foot mechanism.

[0005]

[Means for Solving the Problem] The 1st means of this invention for solving the 1st SUBJECT is considered as a cassette presser foot of the 1st located ahead of a cassette, and a cassette presser foot of the 2nd located in back, is the cassette presser foot of the 1st and the 2nd, and can press a cassette firmly to height determining part material.

[0006] The 2nd means of this invention for solving the 2nd SUBJECT, Are in a position which approached to a cassette presser foot of the 1st in a cassette extraction position, and in a record reproduction possible position, estrange from a cassette presser foot of the 1st, and it is made to be in a position near a cassette back part. In cassette drawing, it stored in a limited space, and it separates from the 1st at the time of cassette positioning, and it pressed the cassette back side more firmly. The 3rd means of this invention for solving the 3rd SUBJECT is the composition of a driving member which performs only horizontal migration to a cassette which moves horizontally and vertically, and it was made to move a cassette presser foot of the 2nd to the 2nd position from the 1st position at the time of a cassette at the time of vertical migration, and relative displacement of a driving member.

[0007]

[Embodiment of the Invention] The cassette carrier which it shows to the 2nd position in which record reproduction is possible from the 1st position [the invention of this invention according to claim 1] that can take out a cassette, The 1st cassette presser-foot mechanism that carries out press holding of said cassette to said cassette carrier in said 1st position, and welds said cassette by pressure to height determining part material in said 2nd position, It is a cassette holder device which has the 2nd cassette presser-foot mechanism that welds said cassette by pressure to said height determining part material in the position near [mechanism / said / 1st / cassette presser-foot] the back part of said cassette. The retaining function in a cassette carrier is achieved by the 1st cassette presser-foot mechanism, and it has the operation of pressing firmly to height determining part material by a record reproduction position by the 1st and 2nd cassette presser-foot mechanisms.

[0008] The invention of this invention according to claim 2 is a cassette holder device which can equip with a small cassette and a large-sized cassette selectively, The cassette carrier which it shows to the 2nd position in which record reproduction is possible from the 1st position that can take out said large-sized cassette and a small cassette, The 1st cassette presser-foot mechanism that carries out press holding of said large-sized cassette and said small cassette to said cassette carrier in said 1st position, and welds by pressure said large-sized cassette and said small cassette to height determining part material in said 2nd position, It is held at the position which approached said 1st cassette presser-foot mechanism in said 1st position, and estranges from said 1st cassette presser-foot mechanism in said 2nd position. It is a cassette holder device which has the 2nd cassette presser-foot mechanism that welds said large-sized cassette by pressure to said height determining part material in the position near the back part of said large-sized cassette, Store the cassette presser foot of the 2nd near the 1st cassette presser-foot mechanism, constitute it from a position which can be taken out compactly, estrange from the 1st cassette presser-foot mechanism in a record reproduction possible position, and the position near the cassette back is pressed down, It has the operation of considering it as a more effective cassette presser foot. The invention of this invention according to claim 3 is a cassette holder device which can equip with a small cassette and a large-sized cassette selectively, The cassette carrier which carries out vertical migration to horizontal migration to the 2nd position in which record reproduction is possible and which is guided from the 1st position that can take out said large-sized cassette and a small cassette, The driving member which moves only horizontally while this cassette carrier moves to said 2nd position from said 1st position, The 1st cassette presser-foot mechanism that carries out press holding of said small cassette and the large-sized cassette to said cassette carrier in said 1st position, and welds by pressure said small cassette and a large-sized cassette to height determining part material in said 2nd position, It is supported by said cassette carrier, enabling free rotation, and engages with said driving member. It is held at the position which approached said 1st cassette presser-foot mechanism in said 1st position, and said large-sized cassette is estranged from said 1st cassette presser-foot mechanism in said 2nd position. Are a cassette holder device which has the 2nd cassette presser-foot mechanism

welded by pressure to said height determining part material in the position near the back part of said large-sized cassette, and it uses carrying out relative displacement by the cassette which carries out vertical migration to the driving member of horizontal migration, it has the operation of carrying out contiguity alienation of the cassette presser foot of the 2nd to the 1st cassette presser-foot mechanism.

[0009] Hereafter, the embodiment of this invention is described using Drawings. Although a recording format is the same, some systems which use several cassettes by which the record time differs exist. The case of working example of this invention is also one of such the systems, and explanation is advanced below as three cases from which size differs, for example where cassette use is carried out. Three cassettes are called below L cassette, M cassette, and S cassette from the one where size is larger. As for these three cassettes, corresponding to the record time, tape length differs in the tape wound diameter to a reel first, respectively as a result of a difference. Therefore, the pitches between reels of two reels also differ, respectively. The L cassette 101 which is a large-sized cassette has the two common tooling holes 101b and 101c in the front center part. If other cassettes have the same tooling holes, these tooling holes are made into a common position and three cassettes are arranged, as shown in drawing 2. The openings 101a, 102a, and 103a which can insert the drawer mailbox for pulling out the tape stretched between the feed reel 101g and the take up reel 101h serve as the almost same position by three cassettes. Each of these three cassettes comprises same thickness. However, as shown in a figure, the M cassette 102 of a small cassette is in the space of the L cassette 101, and the S cassette 103 is in the space of the M cassette 102. In a longitudinal direction, it is the same for the left and the right width focusing on the center line Y. Although the wrap front lid is not illustrated for the magnetic tape stretched in a front face in this figure, the front lid locking pawl locked in the state where this front lid was closed exists in the forward left right positions 101d, 101e, 102d, 102e, 103d, and 103e of each cassette, respectively. The height arrangement area 101j, 101k, 101m, and 101n of hatching shown in the four corners of the L cassette 101 is area which can arrange the height arrangement pin formed in the recording and reproducing device side. 102j, 102k, 102m, and 102n are the height arrangement pinout possible area of the M cassette 102 similarly. They are 103j, 103k, 103m, and the area in which the height arrangement pinout of the S cassette 103 of 103 n is possible. Some height arrangement pin area of the M cassette 102 and the S cassette 103 overlaps. Therefore, if a height arrangement pin is constituted in this duplicate position, it can be considered as a common height arrangement pin. A user explains [for such an L cassette 101 of composition, the M cassette 102, and the S cassette 103] the composition of the cassette holder mechanism directly which can be guided, respectively from the position (the 1st position that can be taken out) which can be taken out after drawing 3 to the position (the 2nd position in which record reproduction is possible) in which record reproduction is possible. Drawing 3 is a general-view figure of this cassette holder mechanism, and mainly shows the whole drive mechanism. A mechanism equips right and left with the top plate 109 at the right side board 107, the left side board 108, and a top panel. If it removes that the gear mechanics 111 including the motor 110 which is a driving source are constituted by the left side board 108, the same composition is accomplished as fundamentally [the left side board 108] as the right side board 107. It has L character slot 107a and the sliding holes 107b and 107c to which it shows the main holder mentioned later. The top plate 109 is being fixed to the right side board 107 and the left side board 108 with the four screws 152. Insertion or extraction is possible for the L cassette 101, the M cassette 102, and the S cassette 103 from N. The main holder holding a cassette moves in the direction of P which holds these cassettes and is illustrated from the 1st position in which extraction and insertion are possible horizontally first, and moves vertically after that. By this, a cassette can be firmly positioned to a prescribed position, the magnetic tape to include can be pulled out, and it can shift to the 2nd position in which record reproduction is possible. Of course, cassette extraction goes up first to an opposite direction with the arrow P, and it enables a user horizontally to take out from the direction of N after retreat. Extraction of a cassette and the cassette insertion guide mechanism 112 which performs insertion are drawing 4. The state of drawing 4 is in the state before equipping a device with a cassette. The front panel 113 which has an opening of a little larger height than the width of breadth G3 of the L cassette 101 and the thickness of the L cassette 101 in the inserting guide mechanism 112, and its opening are provided in the wrap blinder panel 114 auxiliary blinder 115. On both sides of breadth G3 of the S cassette 103, M cassette-guides mechanism 117 is arranged on both sides on both sides of the breadth G2 of the S cassette-guides mechanism 116 and the M cassette 102. S cassette-guides mechanism 116 and M cassette-guides mechanism 117

are symmetrical shape composition, carry out right-and-left linkage at right and left, respectively, and are constituted movable up and down. Although the front panel 113 becomes depressed in the center-section upper and lower sides and forms 113a and 113b, it is for this making a cassette easy to hold. Drawing 5 is the main holder mechanism 118 which holds the L cassette 101, the M cassette 102, and the S cassette 103, and reciprocates between [which can be taken out] a record reproduction position and a position. The main holder mechanism 118 consists of the switch board 120 which connects the right side board part 119a of the electrode holder 119 and the electrode holder 119 and the left side board part 119b which are the cassette carriers of the shape of type of KO. On both sides of breadth G3 of the S cassette 103, M electrode-holder guide structure 122 is constituted on both sides by the electrode holder 119 at both sides on both sides of the breadth G2 of S electrode-holder guide structure 121 and the M cassette 102. Although the L cassette 101 is guided by the right side board part 119a and the left side board part 119b, the subholder mechanism 123 which engages with the L cassette 101 and moves forward and backward is formed near the right side board part 119a and the left side board part 119b. The cassette presser-foot mechanism 127 (1st cassette presser-foot mechanism) which presses a cassette caudad in the right side board part 119a and the left side board part 119b is constituted enabling free rotation. The S cassette 103, the M cassette 102, and the L cassette 101 are formed in S cassette detection switch 124 detectable, respectively, the M cassette detecting switch 125, and the L cassette detecting switch 126 by the switch board 120. Next, drive mechanism is explained. As shown in drawing 15, the output of the motor 110 is told to the worm shaft 142 via the gear mechanics 111. The worm shaft 142 is supported for both ends, enabling free rotation, and constitutes the worm wheel 143 from a center section in one. The rack is engaging to this worm wheel 143. Since a partner is a worm, this rack serves as what is called a bevel tooth profile with angle of torsion only in the angle of lead of the worm. That is, a rack is HASUBARAKKU 145. Now, transfer of driving force is smoothly possible with the combination of a worm and a rack. This HASUBARAKKU 145 is guided to the two bevel rack shafts 239 implanted in the main rack plate (S) 144 which is a driving member, and is supported, enabling a free slide. And HASUBARAKKU 145 is energized in the direction of A with the rack spring 146. The main rack plate (S) 144 is equipped with the bearing 148 for supporting the synchronous shaft 147 to inclined groove (F) 144a, inclined groove (R) 144b, and a top center, enabling free rotation. Although L character slot 108a and the two sliding holes 108b and 108c are constituted by the left side board 108, as shown also in drawing 13 and 14, the synchronous shaft 149 supported enabling the free rotation to the synchronous shaft 147 is engaging with the sliding hole 108c. Furthermore, as shown in drawing 16, the holder shaft A150 penetrates inclined groove (R) 144b of the main rack plate (S) 144, and is engaging with L character slot 108a. The electrode-holder axis colors 158 and 159 are constituted by the holder shaft A150, 158 engages with inclined groove (R) 144b of the main rack plate (S) 144, and 159 is engaging with L character slot 108a. This holder shaft A150 is implanted in the contact bonding plate 154 supported by the electrode holder 119 enabling free rotation in the position of the boss A155 as shown in drawing 6. The contact bonding plate 154 is clockwise energized with the compression bonding spring 160 which engaged with the end, and the position is regulated in contact with the electrode holder 119 for some contact bonding plates 154 in the state of drawing 6. Drawing 17 and 18 explain drive mechanism still in detail. a motor - 110 - an output shaft - adhering - having had - a motor - a gear - 165 - a relaying gear - 166 - an output gear - 230 - a bevel gear - (- A -) - 167 - a bevel gear - (- B -) - 168 - connecting - **** - a motor output - transmitting - having . The output gear 230 and the bevel gear (A) 167 are really composition. The bevel gear (A) 167 and the bevel gear (B) mesh at the angle of 90 degrees. The bevel gear (B) 168 is pressed fit in the worm shaft 142, and rotates in one with the worm wheel 143. a synchronous shaft - 147 - both ends - **** - different gear - (- S -) - 161 - different gear - (- T -) - 162 - one - like - constituting - having - **** - and - respectively - a right side board - 107 - a left side board - 108 - fixing - having had - immobilization - a rack - (- S -) - 163 - immobilization - a rack - (- T -) - 164 - engaging - **** . [0010]If the main rack plate (S) 144 moves with HASUBARAKKU 145, the synchronous shaft 147 will be moved by the bearing 148 provided in the main rack plate (S) 108. Since the different gear (S) 161 are constituted by the synchronous shaft 147 in one at this time, with the fixed rack (S) 163, the different gear (S) 161 and the synchronous shaft 147 will move, making it rotate, that is, will be rolled. The torque is transmitted to the different gear (T) 162, turns into power which is the torque and moves relatively to the fixed rack (T) 164, and moves the different gear (T) 162 side of the synchronous shaft 147. As a result, the main rack plate (T) 231 which supports the synchronous shaft 147 is

moved. thus -- right and left -- main -- a rack plate -- (- S -) - 144 - (- T -) - 231 -- synchronizing -- it can move . main -- a rack plate -- (- S -) - 144 -- main -- a rack -- a version -- (- T -) - 231 -- kicking -- appearance -- carrying out -- a plate - 175 -- a rack -- a holding part - 175 -- a - 175 - c -- fixing with screws -- having -- **** -- a sake -- right and left -- main -- a rack plate -- (- S -) - 144 - (- T -) - 231 -- kicking -- appearance -- carrying out -- a plate - 175 -- one -- composition -- it is .

[0011]On the other hand, drawing 6 and 7 show for a cassette the state which a user can take out. The holder shaft B151 implanted in the electrode holder 119 so that it might illustrate is engaging only with inclined groove (F) 144a of the main rack plate (S) 144 via the electrode-holder axis color 156 similarly. The rack plate axis 153 implanted in the main rack plate (S) 144 is engaging with the sliding hole 108b via the rack plate color 157 similarly.

[0012]Two rollers, the synchronous shaft color supported by the synchronous shaft 147 of the main rack plate (S) 144 as shown also in drawing 10, and the rack plate color 157 supported by the rack plate axis 153, the sliding hole 108b of the left side board 108. Since it is engaging with 108c, respectively, the posture of the main rack plate (S) 144 over the left side board 108 is held.

[0013]and, Since the electrode-holder axis color 158 of the holder shaft A150 and the electrode-holder axis color 156 of the holder shaft B151 are engaging with inclined groove (F) 144a of the main rack plate (S) 144, and inclined groove (R) 144b as shown in drawing 11. The electrode holder 119 is held along with inclined groove (F) 144a and inclined groove (R) 144b to the main rack plate (S) 144, enabling a free slide. On the other hand, the electrode-holder axis color 159 of the holder shaft A150 is engaging also with L character slot 108a of the left side board 108 further. Therefore, as drawing 10 shows, the holder shaft A150 is held at this position to which inclined groove (R) 144b intersected L character slot 108a. If the position of the holder shaft A150 is decided, a position will be uniquely decided within the limits of inclined groove (R) 144b in the position of the holder shaft B151. Therefore, as for the electrode holder 119, a posture will be regulated to the left side board 108. That is, the posture and position of the electrode holder 119 are prescribed by the position of the main rack plate (S) 144 currently held forward and backward to the left side board 108 at slide freedom. The electrode holder 119 runs by the section (the range of R of drawing 10) which has especially the electrode-holder axis color 159 in the horizontal level of L character slot 108a in one with the main rack plate (S) 144. If the range of R is exceeded, the electrode holder 19 descends along with inclined groove (F) 144a and inclined groove (R) 144b.

[0014]Cassette presser-foot power in which the L cassette 101 has the largest size and it is sufficient in the usual cassette presser foot does not occur. Therefore, only L cassette has formed the auxiliary presser-foot mechanism 246 (2nd cassette presser-foot mechanism) in which cassette back is pressed down auxiliary.

[0015]Drawing 6, and 7, 8 and 9 explain this mechanism. The checking and verifying of the boss A155 provided in the auxiliary presser-foot board 173 are carried out to the axis (not shown) implanted in the left side board part 119b of the electrode holder 119, and it is supporting the auxiliary presser-foot board 173, enabling free rotation. The cam part 173a which engages with the auxiliary presser-foot cam pin 176 implanted in the main rack plate (S) at the auxiliary presser-foot board 173 is formed in the end. The auxiliary presser-foot board 169 is supported via the connecting shaft 174 by the other end, enabling free rotation. The auxiliary presser-foot axis 171 provided with the auxiliary presser-foot roller 170 (auxiliary presser-foot member) is formed in this auxiliary presser-foot board 169. Since the auxiliary presser-foot spring 172 is formed between the auxiliary presser-foot board 169 and the auxiliary presser-foot board 173, in the state where the power from the outside is not added with this auxiliary presser-foot spring 172, the position and posture of the auxiliary presser-foot board 169 are held according to the physical relationship shown in drawing 6. This auxiliary presser-foot mechanism 246 is constituted symmetrically with cassette both sides. Drawing 19 explains the details of a main holder mechanism. The subfolder mechanism 123 is formed in the flank of M electrode-holder guide structure 122. The subholder plate 181 which is the relay member which the subfolder mechanism 123 has been arranged at the bottom of the electrode holder 119, and was supported to the electrode holder 119 with the two electrode-holder guide pins 189 enabling the free slide to order, it consists of the L lid lock release claw lever 191 which is the sub cassette carrier supported to the subholder plate 181 enabling a free slide. The subfolder 181 is usually energized in the direction of U with the subholder spring 180. L lid lock release claw lever 191, The subholder plate 181 and the electrode holder 119 were penetrated, and the lock release nail 191d of which the front lid locking pawl 104

which locks the front lid 105 of the L cassette 101 is faced, and a lock is canceled is exposed to cassette space. And it is energized in the direction of V to the subholder plate 181 with the release nail spring 190. Therefore, the subholder plate 181 is usually in the physical relationship of drawing 19 which the end of the guide hole 181b stopped to the electrode-holder guide pin 189. It explains still in detail about the cassette presser-foot mechanism 127. 192 is L insertion detection switch (cassette position detecting switch) which reports that L cassette was inserted. The cassette presser-foot arm 179 supported by the arm pivot 178 implanted in the left lateral part 119b and the right lateral part 119a of the electrode holder 119 as shown in drawing 19 enabling free rotation is constituted. The cassette presser-foot arm 179 is supporting the both ends of the cassette presser-foot axis 177, it was energized in the direction of S of drawing 19 with the spring which is not illustrated, and a part of cassette presser-foot axis 177 is in contact with the contact part 119g of the electrode holder 119 of drawing 8. L presser-foot roller 183 which presses down the L cassette 101, M presser-foot roller 184 which presses down the M cassette 102, and S presser-foot roller 185 which presses down the S cassette 103 are constituted by the cassette presser-foot axis 177, enabling free rotation. The cassette presser-foot roller 245 is supported similarly at the feed reel side of the cassette presser-foot axis 177, enabling free rotation. (Drawing 22) The L detection arm 186 which is a detection arm which detects the classification of a cassette, and which can be rotated, the M detection arm 187, and the S detection arm 188 are constituted by the cassette presser-foot axis 177. These detection arms are energized by the spring which is not illustrated in the direction of P of drawing 23. Corresponding to this detection arm, L cassette detection switch 126, M cassette detection switch 125, and S cassette detection switch 124 are fixed to the detection switch P board 182.

[0016]The operation is explained below about the cassette holder mechanism of the above composition. The case where it shows the M cassette 102 to a record reproduction position from a cassette extraction position is explained. The M cassette 102 is inserted in the state of drawing 4. The breadth of the M cassette 102 is G2. Therefore, it will insert, showing around along with M cassette-guides mechanism 117. By insertion of this M cassette 102, M presser-foot roller 184 and the cassette presser-foot roller 245 which were supported by the cassette presser-foot axis 177 of the cassette presser-foot mechanism 127 by the upper face part of the M cassette 102 enabling free rotation, the spring which is not illustrated as shown in drawing 8 is rotated, it is clockwise rotated focusing on the arm pivot 178, and the result M cassette 102 is elastically energized to the bottom of the electrode holder 119. The electrode holder 119 can hold the M cassette 102 by this energizing force, and the M cassette 102 can be moved to movement of the subsequent electrode holders 119 in one. As it is in drawing 20 and 21 on the other hand, also in a height direction, the auxiliary presser-foot roller 170 of the auxiliary presser-foot mechanism 246 which is the 2nd cassette presser-foot mechanism is outside cassette space, as it is outside M cassette's 102 existence space superficially (drawing 20) and is shown in the side view of drawing 21. Therefore, it does not participate in insertion of the M cassette 102. Although the relation of the cassette presser-foot roller 245 of the cassette presser-foot mechanism 127 when the M cassette 102 is inserted in drawing 22, the cassette presser-foot arm 179, the auxiliary presser-foot axis 171 of the auxiliary presser-foot mechanism 246, the auxiliary presser-foot roller 170, and the blinder panel 114 was shown, it does not interfere in the auxiliary presser-foot roller 170 in the blinder 114 which is near the cassette presser-foot roller 245, and was wide opened by insertion of the M cassette 102. M - a cassette - 102 - an electrode holder - 119 - a position - insertion - completing - if - a motor - 110 - energizing - having - a motor - a gear - 165 - a relaying gear - 166 - a bevel gear - (- A -) - 167 - a bevel gear - (- B -) - 168 - a worm wheel - 143 - torque - transmitting - having . By rotation of the worm wheel 143, HASUBARAKKU 145 which gears to this is moved in the direction (drawing 15, 18) of A. With HASUBARAKKU 145, the main rack plate (S) 144 is also moved in the direction of A in one via the bevel rack shaft 239. The synchronous shaft 147 is also moved in the direction of A via the bearing 148 constituted by the main rack plate (S) 144. Since this synchronous shaft 147 and the rack plate axis 153 are engaging with the sliding holes 108b and 108c of the left side board 108, the main rack plate (S) 144 moves horizontally along that sliding hole (in the direction of A). a synchronous shaft - 147 - different gear - (- S -) - 161 - immobilization - a rack - (- S -) - 163 - rotating - while - A - a direction - progressing - ***** - what is called - rolling - saying - a motion - carrying out . For this reason, torque is transmitted to the different gear (T) in the position which the different gear (S) 161 faced via the synchronous shaft 147. With the different gear (T) 161 and a fixed rack (T), the different-gear (T) side also obtains the thrust which moves forward in the direction of A. This serves as the power of moving the main

rack plate (T) 231 in the direction of A. therefore -- main -- a rack plate -- (- S -) -- 144 -- main -- a rack plate -- (- T -) -- 231 -- synchronizing -- A -- a direction -- progressing -- things -- being possible -- becoming . Then, it moves horizontally, and if it progresses further after the main rack plate (S) 144 shown in drawing 10 follows only the size R, the electrode-holder axis color 159 will reach 108 d of vertical grooves across the level slot 108e of L character slot 108a of the left side board 108. It begins to descend along 108 d of this vertical groove. Since inclined groove (R) 144b is formed in the main rack plate (S) 144 and the electrode-holder axis color 158 is engaging with this slot like drawing 11, to the main rack plate (S) 144, it will descend along with this inclined groove (R) 144b. To compensate for this descent, the electrode-holder axis color 156 also descends along with inclined groove (F) 144a. At this time, since inclined groove (R) 144b and inclined groove (F) 144a are parallel inclined grooves, the electrode holder 119 maintains a parallel posture and descends. Soon, if inclined groove (R) 144b is exceeded, the sticking-by-pressure slot 144c which is a level slot will be reached. The electrode holder 119 is also larger than a vertical migration stroke, and the position of the height direction of this sticking-by-pressure slot 144c has been carried out. If height is decided by the height receptacle pin 243 (height receptacle member) shown in drawing 23, descent of the M cassette 102 will be impossible any more. It only the electrode holder 119 furthermore descends, in contact with the electrode-holder top panel part 119h shown in drawing 8, descent becomes impossible [the cassette presser-foot axis 177 which is pressing the upper surface of the M cassette 102] more than it. That is, although the stroke of the electrode holder 119 is enlarged a little rather than the descending stroke of the M cassette 102, the position of the sticking-by-pressure slot 144c is lowered rather than the vertical stroke of the electrode holder 119. Therefore, since the electrode-holder axis color 158 is depressed along the sticking-by-pressure slot 144c after the electrode holder 119 stops, The contact bonding plate 154 which the holder shaft A150 which is supporting the electrode-holder axis color 158 also descends, and is implanting the holder shaft A150 rotates counterclockwise focusing on the boss A150. The compression bonding spring 160 is extended and the electrode holder 119 is made to weld by pressure caudad by the thing. This contact pressure turns into the power of making the M cassette 102 welding by pressure to the height arrangement pin 243 more firmly via the cassette presser-foot axis 171 from the electrode holder 119. In this way, the M cassette 102 is positioned by the position in which record reproduction is possible as shown in drawing 23. The M cassette 102 receives contact pressure caudad in the position of the arrow Y with the cassette presser-foot roller 243 and M presser-foot roller 184. On the other hand, the height receptacle pin 243 is arranged near the 4 cassette four corners, and the M cassette 102 maintains height. the vector Y -- two height receptacle pins -- it is in a center section mostly, is uniformly pressed by both the height receptacle pin, and is positioned certainly. On the other hand, although the auxiliary presser-foot board 173 of the auxiliary presser-foot mechanism 246 rotates in the direction of an abbreviated 90 degree-hour meter from the state of drawing 21, since the auxiliary presser-foot roller 170 is outside M cassette's 102 existence space as shown in drawing 20, the auxiliary presser-foot mechanism 246 does not act on the M cassette 102 this rotation. Therefore, the contact pressure produced to the M cassette 102 is the vector Y. In this position in position, it is arranged like drawing 12. Only the required stroke which the electrode holder 119 moves horizontally, and the stroke which added the stroke required to move along inclined groove (R) 144b and the sticking-by-pressure slot 144c move the synchronous shaft 147 ahead. If cassette extraction instructions are emitted, the motor 110 will rotate conversely, the worm wheel 143 will be rotated via the gear mechanics 111, and HASUBARAKKU 145 will be moved to an opposite direction with the arrow A of drawing 18. In this way, the electrode holder 119 starts a rise along L character slot of the left side board 108. it retreats, while it is interlocked with, cassette kick appearance is carried out and the planetary arm 216 of the mechanism 241 rotates clockwise along with the evacuation cam 227. When motion moving is completed and it shifts to a horizontal motion, the planetary arm 216 separates from the evacuation arm 227, it is begun to kick it according to spring force, and a position is decided by the roller 218 in contact with the front lid of the M cassette 102.

[0017]Next, the case where the L cassette 101 which is the biggest cassette is inserted is explained. Although operation fundamental also about this is the same as the case of the M cassette 102, in order to avoid duplication, it advances explanation focusing on a different portion. First, if the L cassette 101 is inserted in a cassette opening, L presser-foot roller 183 and the cassette presser-foot roller 245 of the cassette presser-foot axis 177 acted on the top panel of the L cassette 101, and the L cassette 101 is pushed against the electrode holder 119. The L detection arm

186 provided in the cassette presser-foot axis 177, the M detection arm 187, and the S detection arm 188 are rotated altogether, and, as for L cassette detection switch 126, M cassette detection switch 125, and S cassette detection switch 124, a signal changes from H to L. It is electric ** or ** that the cassette inserted for this information is an L cassette. Then, since it is the same as the M cassette 102, the operation to which the cassette presser-foot mechanism 127 makes the height receptacle pin 243 stick the L cassette 101 by pressure is omitted. Since the auxiliary presser-foot mechanism 246 acts in the case of the L cassette 101, the mechanism is explained below. When inserting the L cassette 101, as shown in drawing 6, 7, and drawing 21, in a height direction, the auxiliary presser-foot roller 170 is held in the high position outside cassette insertion space with the auxiliary presser-foot cam pin 176 and the auxiliary presser-foot spring 172 of the main rack plate (S) 144, and it constitutes so that it may become neither cassette insertion nor an obstacle of extraction. As explained at the time of the M cassette 102, the auxiliary presser-foot mechanism 246 is located near the cassette presser-foot mechanism 127, and as shown in drawing 22, it avoids interference with the blinder panel 114. During the horizontal migration section, since the relative position relation of the electrode holder 119 and a main rack plate (S) is [the electrode holder 119] changeless, this state is held. If the vertical migration section comes, since the electrode holder 119 descends along with inclined groove (F) 144a of the main rack plate (S) 144, and inclined groove (R) 144b, it will rotate the auxiliary presser-foot board 173 clockwise with the auxiliary presser-foot cam pin 176. The auxiliary presser-foot roller 170 formed in the auxiliary presser-foot board 169 as a result contacts the upper surface of the L cassette 101, and the auxiliary presser-foot spring 172 develops and it becomes like drawing 1, drawing 24, and 25 because the auxiliary presser-foot board 173 rotates further. In the position which the auxiliary presser-foot mechanism 246 is having established such a moving mechanism, and takes out or inserts a cassette. It can store on about 177 cassette presser-foot axis, when actually operating, the position estranged from the cassette presser-foot axis 177 can be pressed down, the float of the L cassette 101, especially the back 101p (cassette back part) (drawing 25) can be prevented, and positive sticking by pressure and positioning can be performed. The height receptacle pin (L) 244 arranged in the four corners of the L cassette 101 as shown in drawing 25 receives height. At this time, the L cassette 101 receives the power of the vector Y1 with the cassette presser-foot mechanism 127, and receives the power of the vector Y2 with the auxiliary presser-foot mechanism 246. Distance is long to the back 101p of the vector Y1 and the L cassette 101. Therefore, it is not expectable to press firmly the back 101p side of the L cassette 101 by this vector Y1. However, since the vector Y2 of the auxiliary presser-foot mechanism 246 is close to the back 101p of the L cassette 101, it contributes the thrust from this vector Y2 to the press by the side of the back 101p greatly. Of course, this auxiliary presser-foot mechanism 246 is formed also in the take-up-reel side with the same composition. Since the height position of the connecting shaft 174 which is a rotation center of the auxiliary presser-foot roller 170 and the auxiliary presser-foot board 169 is almost the same at the time of the completion of sticking by pressure as shown in drawing 25, As shown in the vector Y, it works as vertical power of a cassette, and the moment added to the auxiliary presser-foot board 169 contributes to firm forcing to a cassette. The line and the cassette pressing direction P which connect the connecting shaft 174 and the auxiliary presser-foot axis 171 are abbreviated 90 degree, and a cassette can be most effectively pressed for the power of the auxiliary presser-foot spring 172. Since this cassette presser-foot roller 170 is not extended only to L cassette's 101 existence space, cassette press is possible only for the time of the L cassette 101. Fundamentally, the operation after cassette extraction instructions were emitted is the same as the case of the M cassette 102. [0018]

[Effect of the Invention] Since the auxiliary presser-foot mechanism was newly formed in the position near a cassette back part with the conventional cassette presser-foot mechanism as mentioned above according to the invention according to claim 1, a cassette with big size can be certainly pressed to the height determining part material of a recording and reproducing device. In the system which has big loads, such as a memory primary detecting element of a contact process, and an incorrect elimination primary detecting element, in a cassette back part like especially a digital video cassette, an effect is large. According to the invention according to claim 2, in the cassette extraction position, an auxiliary presser-foot mechanism is near the cassette presser-foot mechanism, and makes occupied volume small. Therefore, interference with a wrap blinder panel etc. is avoided for a cassette insertion mouth, and the design of other mechanisms in this position is made easy. And at the time of positioning to a recording and reproducing device, an auxiliary presser-foot mechanism is greatly estranged from a cassette presser-foot mechanism to the back

direction of a cassette, The pressing point to the cassette by an auxiliary presser-foot mechanism can be greatly moved to the cassette back side, thrust by the side of the cassette back can be enlarged, and a cassette can be firmly pressed at the height receptacle pin of the four corners. Since it was considered as the method which operates an auxiliary presser-foot mechanism by the cassette vertical migration which relative movement produces between the driving members which constitute and carry out horizontal migration of the auxiliary presser-foot mechanism to a cassette holder according to the invention according to claim 3, To the motion which needs the big output of making estranging from a cassette presser-foot mechanism an auxiliary presser-foot mechanism and carrying out cassette press, there are little input and load which an auxiliary presser-foot mechanism gives to a drive for a big input called the vertical migration of a cassette, and it ends. A big output can be obtained with a light load.

[0019]According to the invention according to claim 4, since the height position of the connecting shaft 174 which is a rotation center of the auxiliary presser-foot roller 170 and the auxiliary presser-foot board 169 is almost the same at the time of the completion of sticking by pressure, it works as vertical power of a cassette and the moment added to the auxiliary presser-foot board 169 contributes to firm forcing to a cassette. That is, the power of the auxiliary presser-foot spring 172 of giving the angular moment to the auxiliary presser-foot board 169 can be efficiently transformed to cassette presser-foot power. Speaking paradoxically, there being little load to a motor and ending.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the cassette holder device which shows the tape cassette used for a recording and reproducing device etc. to the position in which record reproduction is possible.

PRIOR ART

[Description of the Prior Art] In the device which uses selectively several cassettes by which cassette sizes differ, reservation of the suitable grip cost of the user at the time of cassette extraction poses a problem by considering the difference of the size of a large-sized cassette and a small cassette, especially the difference of a depth direction as a reason. If it sets up to secure sufficient grip cost for a small cassette, a cassette holder must be moved to the position which approached the cassette insertion mouth more. If it does so, the cassette presser-foot mechanism which presses the cassette upper surface provided in a cassette holder will be limited to a near position by the front face cover of a cassette. The digital video cassette which is already standardized as an example and is also following commercialization is explained. There is a top view which has arranged in piles the cassette of two kinds of size standardized by drawing 27 as a digital video cassette (following only cassette) in the position in which record reproduction is possible. If the large-sized cassette (L cassette) 1 and the small cassette (S cassette) 31 are positioned by the tooling holes 3e, 3f, 33e, and 33f, they will serve as arrangement like drawing 27. Although the openings 3p and 33p into which a mailbox etc. can advance become the same position, reel positions differ, respectively. Thus, positioning with the recording and reproducing device of the cassette by which sizes differ consists of a page pin provided in the tooling holes 3e, 3f, 33e, and 33f, and a height arrangement focus which supports height in addition to this. The hatching 3i and 33i shown in drawing 26 shows the field which can arrange a height arrangement pin. Positioning of this cassette is made by the S cassette 31 and the L cassette 1 being firmly pressed from the cassette upper surface. The cassette presser foot is provided in the electrode holder which generally holds and takes out a cassette and is conveyed in a record reproduction possible position from a position. If a cassette is inserted in an electrode holder, it will be energized by this cassette presser-foot member to an electrode holder, and the cassette will be held by that energizing force.

It is the same also with the device handling two or more cassettes. Therefore, the position of the cassette presser foot turns into a common position of a size cassette. Considering the time of being positioned by the last record reproduction position, the position of the cassette presser foot becomes between 33 f of tooling holes of drawing 26.

and the hatching portions 33i. However, when the sizes of a cassette differ this much, the position of the cassette presser foot may be optimal position by the S cassette 31, but in the L cassette 1, 3 f of tooling holes are approached too much, and the energizing force over the height arrangement pin of the hatching portions 3i becomes weak. Then, although the mechanism who moves the position of a cassette presser foot back at the time of cassette positioning is also proposed, Although it is possible by an independent cassette **** mechanism, it is dramatically difficult to choose whether in the mechanism handling two or more cassettes, the classification of a cassette is detected and a cassette presser-foot mechanism is back moved by the classification, or a position as it is maintained.

EFFECT OF THE INVENTION

[Effect of the Invention] Since the auxiliary presser-foot mechanism was newly formed in the position near a cassette back part with the conventional cassette presser-foot mechanism as mentioned above according to the invention according to claim 1, a cassette with big size can be certainly pressed to the height determining part material of a recording and reproducing device. In the system which has big loads, such as a memory primary detecting element of a contact process, and an incorrect elimination primary detecting element, in a cassette back part like especially a digital video cassette, an effect is large. According to the invention according to claim 2, in the cassette extraction position, an auxiliary presser-foot mechanism is near the cassette presser-foot mechanism, and makes occupied volume small. Therefore, interference with a wrap blinder panel etc. is avoided for a cassette insertion mouth, and the design of other mechanisms in this position is made easy. And at the time of positioning to a recording and reproducing device, an auxiliary presser-foot mechanism is greatly estranged from a cassette presser-foot mechanism to the back direction of a cassette. The pressing point to the cassette by an auxiliary presser-foot mechanism can be greatly moved to the cassette back side, thrust by the side of the cassette back can be enlarged, and a cassette can be firmly pressed at the height receptacle pin of the four corners. Since it was considered as the method which operates an auxiliary presser-foot mechanism by the cassette vertical migration which relative movement produces between the driving members which constitute and carry out horizontal migration of the auxiliary presser-foot mechanism to a cassette holder according to the invention according to claim 3, To the motion which needs the big output of making estranging from a cassette presser-foot mechanism an auxiliary presser-foot mechanism and carrying out cassette press, there are little input and load which an auxiliary presser-foot mechanism gives to a drive for a big input called the vertical migration of a cassette, and it ends. A big output can be obtained with a light load.

[0019] According to the invention according to claim 4, since the height position of the connecting shaft 174 which is a rotation center of the auxiliary presser-foot roller 170 and the auxiliary presser-foot board 169 is almost the same at the time of the completion of sticking by pressure, it works as vertical power of a cassette and the moment added to the auxiliary presser-foot board 169 contributes to firm forcing to a cassette. That is, the power of the auxiliary presser-foot spring 172 of giving the angular moment to the auxiliary presser-foot board 169 can be efficiently transformed to cassette presser-foot power. Speaking paradoxically, there being little load to a motor and ending.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] The 1st SUBJECT for this invention to aim at solution is the point that the conventional cassette holder device cannot energize a cassette with such large size to a positioning member firmly.

The 1st purpose of this invention is accomplished in order to solve the above-mentioned problem, and it provides the cassette holder device which energizes a cassette to a positioning member firmly in a record reproduction position.

[0004] The 2nd SUBJECT for this invention to aim at solution is the point that energizing force sufficient by a large-sized cassette cannot be acquired even if it can acquire the energizing force optimal by a small cassette in the device with which the conventional cassette holder device uses two or more cassettes selectively. The 2nd purpose of this invention is accomplished in order to solve the above-mentioned problem, and it provides the cassette holder device

with which the optimal energizing force for each cassette is acquired. The 3rd SUBJECT for this invention to aim at solution is the point that the cassette presser-foot mechanism which takes out required thrust with the cassette of ***** was not able to be proposed as a rational means, when the conventional cassette holder device makes it equip with the cassette by which sizes differ selectively. The 3rd purpose of this invention is accomplished in order to solve the above-mentioned problem, and it provides the cassette holder device provided with the rational cassette presser-foot mechanism.

MEANS

[Means for Solving the Problem]The 1st means of this invention for solving the 1st SUBJECT is considered as a cassette presser foot of the 1st located ahead of a cassette, and a cassette presser foot of the 2nd located in back, is the cassette presser foot of the 1st and the 2nd, and can press a cassette firmly to height determining part material. [0006]The 2nd means of this invention for solving the 2nd SUBJECT, Are in a position which approached to a cassette presser foot of the 1st in a cassette extraction position, and in a record reproduction possible position, estrange from a cassette presser foot of the 1st, and it is made to be in a position near a cassette back part, In cassette drawing, it stored in a limited space, and it separates from the 1st at the time of cassette positioning, and it pressed the cassette back side more firmly. The 3rd means of this invention for solving the 3rd SUBJECT is the composition of a driving member which performs only horizontal migration to a cassette which moves horizontally and vertically, and it was made to move a cassette presser foot of the 2nd to the 2nd position from the 1st position at the time of a cassette at the time of vertical migration, and relative displacement of a driving member.

[0007]

[Embodiment of the Invention]The cassette carrier which it shows to the 2nd position in which record reproduction is possible from the 1st position [the invention of this invention according to claim 1] that can take out a cassette, The 1st cassette presser-foot mechanism that carries out press holding of said cassette to said cassette carrier in said 1st position, and welds said cassette by pressure to height determining part material in said 2nd position, It is a cassette holder device which has the 2nd cassette presser-foot mechanism that welds said cassette by pressure to said height determining part material in the position near [mechanism / said / 1st / cassette presser-foot] the back part of said cassette, The retaining function in a cassette carrier is achieved by the 1st cassette presser-foot mechanism, and it has the operation of pressing firmly to height determining part material by a record reproduction position by the 1st and 2nd cassette presser-foot mechanisms.

[0008]The invention of this invention according to claim 2 is a cassette holder device which can equip with a small cassette and a large-sized cassette selectively, The cassette carrier which it shows to the 2nd position in which record reproduction is possible from the 1st position that can take out said large-sized cassette and a small cassette, The 1st cassette presser-foot mechanism that carries out press holding of said large-sized cassette and said small cassette to said cassette carrier in said 1st position, and welds by pressure said large-sized cassette and said small cassette to height determining part material in said 2nd position, It is held at the position which approached said 1st cassette presser-foot mechanism in said 1st position, and estranges from said 1st cassette presser-foot mechanism in said 2nd position. It is a cassette holder device which has the 2nd cassette presser-foot mechanism that welds said large-sized cassette by pressure to said height determining part material in the position near the back part of said large-sized cassette, Store the cassette presser foot of the 2nd near the 1st cassette presser-foot mechanism, constitute it from a position which can be taken out compactly, estrange from the 1st cassette presser-foot mechanism in a record reproduction possible position, and the position near the cassette back is pressed down, It has the operation of considering it as a more effective cassette presser foot. The invention of this invention according to claim 3 is a cassette holder device which can equip with a small cassette and a large-sized cassette selectively, The cassette carrier which carries out vertical migration to horizontal migration to the 2nd position in which record reproduction is possible and which is guided from the 1st position that can take out said large-sized cassette and a small cassette, The driving member which moves only horizontally while this cassette carrier moves to said 2nd position from said 1st position, The

1st cassette presser-foot mechanism that carries out press holding of said small cassette and the large-sized cassette to said cassette carrier in said 1st position, and welds by pressure said small cassette and a large-sized cassette to height determining part material in said 2nd position, it is supported by said cassette carrier, enabling free rotation, and engages with said driving member. It is held at the position which approached said 1st cassette presser-foot mechanism in said 1st position, and said large-sized cassette is estranged from said 1st cassette presser-foot mechanism in said 2nd position. Are a cassette holder device which has the 2nd cassette presser-foot mechanism welded by pressure to said height determining part material in the position near the back part of said large-sized cassette, and it uses carrying out relative displacement by the cassette which carries out vertical migration to the driving member of horizontal migration, it has the operation of carrying out contiguity alienation of the cassette presser foot of the 2nd to the 1st cassette presser-foot mechanism.

[0009] Hereafter, the embodiment of this invention is described using Drawings. Although a recording format is the same, some systems which use several cassettes by which the record time differs exist. The case of working example of this invention is also one of such the systems, and explanation is advanced below as three cases from which size differs, for example where cassette use is carried out. Three cassettes are called below L cassette, M cassette, and S cassette from the one where size is larger. As for these three cassettes, corresponding to the record time, tape length differs in the tape wound diameter to a reel first, respectively as a result of a difference. Therefore, the pitches between reels of two reels also differ, respectively. The L cassette 101 which is a large-sized cassette has the two common tooling holes 101b and 101c in the front center part. If other cassettes have the same tooling holes, these tooling holes are made into a common position and three cassettes are arranged, as shown in drawing 2. The openings 101a, 102a, and 103a which can insert the drawer mailbox for pulling out the tape stretched between the feed reel 101g and the take up reel 101h serve as the almost same position by three cassettes. Each of these three cassettes comprises same thickness. However, as shown in a figure, the M cassette 102 of a small cassette is in the space of the L cassette 101, and the S cassette 103 is in the space of the M cassette 102. In a longitudinal direction, it is the same for the left and the right width focusing on the center line Y. Although the wrap front lid is not illustrated for the magnetic tape stretched in a front face in this figure, the front lid locking pawl locked in the state where this front lid was closed exists in the forward left right positions 101d, 101e, 102d, 102e, 103d, and 103e of each cassette, respectively. The height arrangement area 101j, 101k, 101m, and 101n of hatching shown in the four corners of the L cassette 101 is area which can arrange the height arrangement pin formed in the recording and reproducing device side. 102j, 102k, 102m, and 102n are the height arrangement pinout possible area of the M cassette 102 similarly. They are 103j, 103k, 103m, and the area in which the height arrangement pinout of the S cassette 103 of 103 n is possible. Some height arrangement pin area of the M cassette 102 and the S cassette 103 overlaps. Therefore, if a height arrangement pin is constituted in this duplicate position, it can be considered as a common height arrangement pin. A user explains [for such an L cassette 101 of composition, the M cassette 102, and the S cassette 103] the composition of the cassette holder mechanism directly which can be guided, respectively from the position (the 1st position that can be taken out) which can be taken out after drawing 3 to the position (the 2nd position in which record reproduction is possible) in which record reproduction is possible. Drawing 3 is a general-view figure of this cassette holder mechanism, and mainly shows the whole drive mechanism. A mechanism equips right and left with the top plate 109 at the right side board 107, the left side board 108, and a top panel. If it removes that the gear mechanics 111 including the motor 110 which is a driving source are constituted by the left side board 108, the same composition is accomplished as fundamentally [the left side board 108] as the right side board 107. It has L character slot 107a and the sliding holes 107b and 107c to which it shows the main holder mentioned later. The top plate 109 is being fixed to the right side board 107 and the left side board 108 with the four screws 152. Insertion or extraction is possible for the L cassette 101, the M cassette 102, and the S cassette 103 from N. The main holder holding a cassette moves in the direction of P which holds these cassettes and is illustrated from the 1st position in which extraction and insertion are possible horizontally first, and moves vertically after that. By this, a cassette can be firmly positioned to a prescribed position, the magnetic tape to include can be pulled out, and it can shift to the 2nd position in which record reproduction is possible. Of course, cassette extraction goes up first to an opposite direction with the arrow P, and it enables a user horizontally to take out from the direction of N after retreat. Extraction of a cassette and the cassette insertion guide mechanism 112

which performs insertion are drawing 4. The state of drawing 4 is in the state before equipping a device with a cassette. The front panel 113 which has an opening of a little larger height than the width of breadth G3 of the L cassette 101 and the thickness of the L cassette 101 in the inserting guide mechanism 112, and its opening are provided in the wrap blinder panel 114 auxiliary blinder 115. On both sides of breadth G3 of the S cassette 103, M cassette-guides mechanism 117 is arranged on both sides at both sides on both sides of the breadth G2 of S cassette-guides mechanism 116 and the M cassette 102. S cassette-guides mechanism 116 and M cassette-guides mechanism 117 are symmetrical shape composition, carry out right-and-left linkage at right and left, respectively, and are constituted movable up and down. Although the front panel 113 becomes depressed in the center-section upper and lower sides and forms 113a and 113b, it is for this making a cassette easy to hold. Drawing 5 is the main holder mechanism 118 which holds the L cassette 101, the M cassette 102, and the S cassette 103, and reciprocates between [which can be taken out] a record reproduction position and a position. The main holder mechanism 118 consists of the switch board 120 which connects the right side board part 119a of the electrode holder 119 and the electrode holder 119 and the left side board part 119b which are the cassette carriers of the shape of type of KO. On both sides of breadth G3 of the S cassette 103, M electrode-holder guide structure 122 is constituted on both sides by the electrode holder 119 at both sides on both sides of the breadth G2 of S electrode-holder guide structure 121 and the M cassette 102. Although the L cassette 101 is guided by the right side board part 119a and the left side board part 119b, the subfolder mechanism 123 which engages with the L cassette 101 and moves forward and backward is formed near the right side board part 119a and the left side board part 119b. The cassette presser-foot mechanism 127 (1st cassette presser-foot mechanism) which presses a cassette caudad in the right side board part 119a and the left side board part 119b is constituted enabling free rotation. The S cassette 103, the M cassette 102, and the L cassette 101 are formed in S cassette detection switch 124 detectable, respectively, the M cassette detecting switch 125, and the L cassette detecting switch 126 by the switch board 120. Next, drive mechanism is explained. As shown in drawing 15, the output of the motor 110 is told to the worm shaft 142 via the gear mechanics 111. The worm shaft 142 is supported for both ends, enabling free rotation, and constitutes the worm wheel 143 from a center section in one. The rack is engaging to this worm wheel 143. Since a partner is a worm, this rack serves as what is called a bevel tooth profile with angle of torsion only in the angle of lead of the worm. That is, a rack is HASUBARAKKU 145. Now, transfer of driving force is smoothly possible with the combination of a worm and a rack. This HASUBARAKKU 145 is guided to the two bevel rack shafts 239 implanted in the main rack plate (S) 144 which is a driving member, and is supported, enabling a free slide. And HASUBARAKKU 145 is energized in the direction of A with the rack spring 146. The main rack plate (S) 144 is equipped with the bearing 148 for supporting the synchronous shaft 147 to inclined groove (F) 144a, inclined groove (R) 144b, and a top center, enabling free rotation. Although L character slot 108a and the two sliding holes 108b and 108c are constituted by the left side board 108, as shown also in drawing 13 and 14, the synchronous shaft color 149 supported enabling the free rotation to the synchronous shaft 147 is engaging with the sliding hole 108c. Furthermore, as shown in drawing 16, the holder shaft A150 penetrates inclined groove (R) 144b of the main rack plate (S) 144, and is engaging with L character slot 108a. The electrode-holder axis colors 158 and 159 are constituted by the holder shaft A150, 158 engages with inclined groove (R) 144b of the main rack plate (S) 144, and 159 is engaging with L character slot 108a. This holder shaft A150 is implanted in the contact bonding plate 154 supported by the electrode holder 119 enabling free rotation in the position of the boss A155 as shown in drawing 6. The contact bonding plate 154 is clockwise energized with the compression bonding spring 160 which engaged with the end, and the position is regulated in contact with the electrode holder 119 for some contact bonding plates 154 in the state of drawing 6. Drawing 17 and 18 explain drive mechanism still in detail. a motor - 110 - an output shaft - adhering - having had - a motor - a gear - 165 - a relaying gear - 166 - an output gear - 230 - a bevel gear - (- A -) - 167 - a bevel gear - (- B -) - 168 - connecting - **** - a motor output - transmitting - having . The output gear 230 and the bevel gear (A) 167 are really composition. The bevel gear (A) 167 and the bevel gear (B) mesh at the angle of 90 degrees. The bevel gear (B) 168 is pressed fit in the worm shaft 142, and rotates in one with the worm wheel 143. a synchronous shaft - 147 - both ends - **** - different gear - (- S -) - 161 - different gear - (- T -) - 162 - one - like - constituting - having - **** - and - respectively - a right side board - 107 - a left side board - 108 - fixing - having had - immobilization - a rack - (- S -) - 163 - immobilization - a rack - (- T -) - 164 - engaging - ****.

[0010]If the main rack plate (S) 144 moves with HASUBARAKKU 145, the synchronous shaft 147 will be moved by the bearing 148 provided in the main rack plate (S) 108. Since the different gear (S) 161 are constituted by the synchronous shaft 147 in one at this time, with the fixed rack (S) 163, the different gear (S) 161 and the synchronous shaft 147 will move, making it rotate, that is, will be rolled. The torque is transmitted to the different gear (T) 162, turns into power which is the torque and moves relatively to the fixed rack (T) 164, and moves the different-gear (T) 162 side of the synchronous shaft 147. As a result, the main rack plate (T) 231 which supports the synchronous shaft 147 is moved, thus - right and left - main - a rack plate - (- S) - 144 - (- T) - 231 - synchronizing - it can move, main - a rack plate - (- S) - 144 - main - a rack - a version - (- T) - 231 - kicking - appearance - carrying out - a plate - 175 - a rack - a holding part - 175 - a - 175 - c - fixing with screws - having - **** - a sake - right and left - main - a rack plate - (- S) - 144 - (- T) - 231 - kicking - appearance - carrying out - a plate - 175 - one - composition - it is.

[0011]On the other hand, drawing 6 and 7 show for a cassette the state which a user can take out. The holder shaft B151 implanted in the electrode holder 119 so that it might illustrate is engaging only with inclined groove (F) 144a of the main rack plate (S) 144 via the electrode-holder axis color 156 similarly. The rack plate axis 153 implanted in the main rack plate (S) 144 is engaging with the sliding hole 108b via the rack plate color 157 similarly.

[0012]Two rollers, the synchronous shaft color supported by the synchronous shaft 147 of the main rack plate (S) 144 as shown also in drawing 10, and the rack plate color 157 supported by the rack plate axis 153, the sliding hole 108b of the left side board 108, Since it is engaging with 108c, respectively, the posture of the main rack plate (S) 144 over the left side board 108 is held.

[0013]and, Since the electrode-holder axis color 158 of the holder shaft A150 and the electrode-holder axis color 156 of the holder shaft B151 are engaging with inclined groove (F) 144a of the main rack plate (S) 144, and inclined groove (R) 144b as shown in drawing 11. The electrode holder 119 is held along with inclined groove (F) 144a and inclined groove (R) 144b to the main rack plate (S) 144, enabling a free slide. On the other hand, the electrode-holder axis color 159 of the holder shaft A150 is engaging also with L character slot 108a of the left side board 108 further. Therefore, as drawing 10 shows, the holder shaft A150 is held at this position to which inclined groove (R) 144b intersected L character slot 108a. If the position of the holder shaft A150 is decided, a position will be uniquely decided within the limits of inclined groove (R) 144b in the position of the holder shaft B151. Therefore, as for the electrode holder 119, a posture will be regulated to the left side board 108. That is, the posture and position of the electrode holder 119 are prescribed by the position of the main rack plate (S) 144 currently held forward and backward to the left side board 108 at slide freedom. The electrode holder 119 runs by the section (the range of R of drawing 10) which has especially the electrode-holder axis color 159 in the horizontal level of L character slot 108a in one with the main rack plate (S) 144. If the range of R is exceeded, the electrode holder 19 descends along with inclined groove (F) 144a and inclined groove (R) 144b.

[0014]Cassette presser-foot power in which the L cassette 101 has the largest size and it is sufficient in the usual cassette presser foot does not occur. Therefore, only L cassette has formed the auxiliary presser-foot mechanism 246 (2nd cassette presser-foot mechanism) in which cassette back is pressed down auxiliary.

[0015]Drawing 6, and 7, 8 and 9 explain this mechanism. The checking and verifying of the boss A155 provided in the auxiliary presser-foot board 173 are carried out to the axis (not shown) implanted in the left side board part 119b of the electrode holder 119, and it is supporting the auxiliary presser-foot board 173, enabling free rotation. The cam part 173a which engages with the auxiliary presser-foot cam pin 176 implanted in the main rack plate (S) at the auxiliary presser-foot board 173 is formed in the end. The auxiliary presser-foot board 169 is supported via the connecting shaft 174 by the other end, enabling free rotation. The auxiliary presser-foot axis 171 provided with the auxiliary presser-foot roller 170 (auxiliary presser-foot member) is formed in this auxiliary presser-foot board 169. Since the auxiliary presser-foot spring 172 is formed between the auxiliary presser-foot board 169 and the auxiliary presser-foot board 173, in the state where the power from the outside is not added with this auxiliary presser-foot spring 172, the position and posture of the auxiliary presser-foot board 169 are held according to the physical relationship shown in drawing 6. This auxiliary presser-foot mechanism 246 is constituted symmetrically with cassette both sides. Drawing 19 explains the details of a main holder mechanism. The subfolder mechanism 123 is formed in the flank of M electrode-holder guide

structure 122. The subholder plate 181 which is the relay member which the subfolder mechanism 123 has been arranged at the bottom of the electrode holder 119, and was supported to the electrode holder 119 with the two electrode-holder guide pins 189 enabling the free slide to order, it consists of the L lid lock release claw lever 191 which is the sub cassette career supported to the subholder plate 181 enabling a free slide. The subfolder 181 is usually energized in the direction of U with the subfolder spring 180. L lid lock release claw lever 191, The subholder plate 181 and the electrode holder 119 were penetrated, and the lock release nail 191d of which the front lid locking pawl 104 which locks the front lid 105 of the L cassette 101 is faced, and a lock is canceled is exposed to cassette space. And it is energized in the direction of V to the subholder plate 181 with the release nail spring 190. Therefore, the subholder plate 181 is usually in the physical relationship of drawing 19 which the end of the guide hole 181b stopped to the electrode-holder guide pin 189. It explains still in detail about the cassette presser-foot mechanism 127. 192 is L insertion detection switch (cassette position detecting switch) which reports that L cassette was inserted. The cassette presser-foot arm 179 supported by the arm pivot 178 implanted in the left lateral part 119b and the right lateral part 119a of the electrode holder 119 as shown in drawing 19 enabling free rotation is constituted. The cassette presser-foot arm 179 is supporting the both ends of the cassette presser-foot axis 177, it was energized in the direction of S of drawing 19 with the spring which is not illustrated, and a part of cassette presser-foot axis 177 is in contact with the contact part 119g of the electrode holder 119 of drawing 8. L presser-foot roller 183 which presses down the L cassette 101, M presser-foot roller 184 which presses down the M cassette 102, and S presser-foot roller 185 which presses down the S cassette 103 are constituted by the cassette presser-foot axis 177, enabling free rotation. The cassette presser-foot roller 245 is supported similarly at the feed reel side of the cassette presser-foot axis 177, enabling free rotation. (Drawing 22) The L detection arm 186 which is a detection arm which detects the classification of a cassette, and which can be rotated, the M detection arm 187, and the S detection arm 188 are constituted by the cassette presser-foot axis 177. These detection arms are energized by the spring which is not illustrated in the direction of P of drawing 23. Corresponding to this detection arm, L cassette detection switch 126, M cassette detection switch 125, and S cassette detection switch 124 are fixed to the detection switch P board 182.

[0016]The operation is explained below about the cassette holder mechanism of the above composition. The case where it shows the M cassette 102 to a record reproduction position from a cassette extraction position is explained. The M cassette 102 is inserted in the state of drawing 4. The breadth of the M cassette 102 is G2. Therefore, it will insert, showing around along with M cassette-guides mechanism 117. By insertion of this M cassette 102, M presser-foot roller 184 and the cassette presser-foot roller 245 which were supported by the cassette presser-foot axis 177 of the cassette presser-foot mechanism 127 by the upper face part of the M cassette 102 enabling free rotation, The spring which is not illustrated as shown in drawing 8 is resisted, it is clockwise rotated focusing on the arm pivot 178, and the result M cassette 102 is elastically energized to the bottom of the electrode holder 119. The electrode holder 119 can hold the M cassette 102 by this energizing force, and the M cassette 102 can be moved to movement of the subsequent electrode holders 119 in one. As it is in drawing 20 and 21 on the other hand, also in a height direction, the auxiliary presser-foot roller 170 of the auxiliary presser-foot mechanism 246 which is the 2nd cassette presser-foot mechanism is outside cassette space, as it is outside M cassette's 102 existence space superficially (drawing 20) and is shown in the side view of drawing 21. Therefore, it does not participate in insertion of the M cassette 102. Although the relation of the cassette presser-foot roller 245 of the cassette presser-foot mechanism 127 when the M cassette 102 is inserted in drawing 22, the cassette presser-foot arm 179, the auxiliary presser-foot axis 171 of the auxiliary presser-foot mechanism 246, the auxiliary presser-foot roller 170, and the blinder panel 114 was shown, it does not interfere in the auxiliary presser-foot roller 170 in the blinder 114 which is near the cassette presser-foot roller 245, and was wide opened by insertion of the M cassette 102. M – a cassette – 102 – an electrode holder – 119 – a position – insertion – completing – if – a motor – 110 – energizing – having – a motor – a gear – 165 – a relaying gear – 166 – a bevel gear – (– A –) – 167 – a bevel gear – (– B –) – 168 – a worm wheel – 143 – torque – transmitting – having. By rotation of the worm wheel 143, HASUBARAKKU 145 which gears to this is moved in the direction (drawing 15, 18) of A. With HASUBARAKKU 145, the main rack plate (S) 144 is also moved in the direction of A in one via the bevel rack shaft 239. The synchronous shaft 147 is also moved in the direction of A via the bearing 148 constituted by the main rack plate (S) 144. Since this synchronous shaft 147 and the rack plate axis 153 are engaging

with the sliding holes 108b and 108c of the left side board 108, the main rack plate (S) 144 moves horizontally along that sliding hole (in the direction of A). a synchronous shaft - 147 - different gear - (- S -) - 161 - immobilization - a rack - (- S -) - 163 - rotating - while - A - a direction - progressing - ***** - what is called - rolling - saying - a motion - carrying out . For this reason, torque is transmitted to the different gear (T) in the position which the different gear (S) 161 faced via the synchronous shaft 147. With the different gear (T) 161 and a fixed rack (T), the different-gear (T) side also obtains the thrust which moves forward in the direction of A. This serves as the power of moving the main rack plate (T) 231 in the direction of A. therefore - main - a rack plate - (- S -) - 144 - main - a rack plate - (- T -) - 231 - synchronizing - A - a direction - progressing - things - being possible - becoming . Then, it moves horizontally, and if it progresses further after the main rack plate (S) 144 shown in drawing 10 follows only the size R, the electrode-holder axis color 159 will reach 108 d of vertical grooves across the level slot 108e of L character slot 108a of the left side board 108. It begins to descend along 108 d of this vertical groove. Since inclined groove (F) 144b is formed in the main rack plate (S) 144 and the electrode-holder axis color 158 is engaging with this slot like drawing 11, to the main rack plate (S) 144, it will descend along with this inclined groove (F) 144b. To compensate for this descent, the electrode-holder axis color 156 also descends along with inclined groove (F) 144a. At this time, since inclined groove (R) 144b and inclined groove (F) 144a are parallel inclined grooves, the electrode holder 119 maintains a parallel posture and descends. Soon, if inclined groove (F) 144b is exceeded, the sticking-by-pressure slot 144c which is a level slot will be reached. The electrode holder 119 is also larger than a vertical migration stroke, and the position of the height direction of this sticking-by-pressure slot 144c has been carried out. If height is decided by the height receptacle pin 243 (height receptacle member) shown in drawing 23, descent of the M cassette 102 will be impossible any more. It only the electrode holder 119 furthermore descends, in contact with the electrode-holder top panel part 119h shown in drawing 8, descent becomes impossible [the cassette presser-foot axis 177 which is pressing the upper surface of the M cassette 102] more than it. That is, although the stroke of the electrode holder 119 is enlarged a little rather than the descending stroke of the M cassette 102, the position of the sticking-by-pressure slot 144c is lowered rather than the vertical stroke of the electrode holder 119. Therefore, since the electrode-holder axis color 158 is depressed along the sticking-by-pressure slot 144c after the electrode holder 119 stops, the contact bonding plate 154 which the holder shaft A150 which is supporting the electrode-holder axis color 158 also descends, and is implanting the holder shaft A150 rotates counterclockwise focusing on the boss A150. The compression bonding spring 160 is extended and the electrode holder 119 is made to weld by pressure caudal by the thing. This contact pressure turns into the power of making the M cassette 102 welding by pressure to the height arrangement pin 243 more firmly via the cassette presser-foot axis 171 from the electrode holder 119. In this way, the M cassette 102 is positioned by the position in which record reproduction is possible as shown in drawing 23. The M cassette 102 receives contact pressure caudal in the position of the arrow Y with the cassette presser-foot roller 243 and M presser-foot roller 184. On the other hand, the height receptacle pin 243 is arranged near the 4 cassette four corners, and the M cassette 102 maintains height. the vector Y - two height receptacle pins - it is in a center section mostly, is uniformly pressed by both the height receptacle pin, and is positioned certainly. On the other hand, although the auxiliary presser-foot board 173 of the auxiliary presser-foot mechanism 246 rotates in the direction of an abbreviated 90 degree-hour meter from the state of drawing 21, since the auxiliary presser-foot roller 170 is outside M cassette's 102 existence space as shown in drawing 20, the auxiliary presser-foot mechanism 246 does not act on the M cassette 102 this rotation. Therefore, the contact pressure produced to the M cassette 102 is the vector Y. In this position in position, it is arranged like drawing 12. Only the required stroke which the electrode holder 119 moves horizontally, and the stroke which added the stroke required to move along inclined groove (F) 144b and the sticking-by-pressure slot 144c move the synchronous shaft 147 ahead. If cassette extraction instructions are emitted, the motor 110 will rotate conversely, the worm wheel 143 will be rotated via the gear mechanics 111, and HASUBARAKKU 145 will be moved to an opposite direction with the arrow A of drawing 18. In this way, the electrode holder 119 starts a rise along L character slot of the left side board 108. it retreats, while it is interlocked with, cassette kick appearance is carried out and the planetary arm 216 of the mechanism 241 rotates clockwise along with the evacuation cam 227. When motion moving is completed and it shifts to a horizontal motion, the planetary arm 216 separates from the evacuation arm 227, it is begun to kick it according to spring force, and a position is decided by the roller 218 in contact with the front lid of the

M cassette 102.

[0017]Next, the case where the L cassette 101 which is the biggest cassette is explained. Although operation fundamental also about this is the same as the case of the M cassette 102, in order to avoid duplication, it advances explanation focusing on a different portion. First, if the L cassette 101 is inserted in a cassette opening, L presser-foot roller 183 and the cassette presser-foot roller 245 of the cassette presser-foot axis 177 acted on the top panel of the L cassette 101, and the L cassette 101 is pushed against the electrode holder 119. The L detection arm 186 provided in the cassette presser-foot axis 177, the M detection arm 187, and the S detection arm 188 are rotated altogether, and, as for L cassette detection switch 126, M cassette detection switch 125, and S cassette detection switch 124, a signal changes from H to L. It is electric ** or ** that the cassette inserted for this information is an L cassette. Then, since it is the same as the M cassette 102, the operation to which the cassette presser-foot mechanism 127 makes the height receptacle pin 243 stick the L cassette 101 by pressure is omitted. Since the auxiliary presser-foot mechanism 246 acts in the case of the L cassette 101, the mechanism is explained below. When inserting the L cassette 101, as shown in drawing 6, 7, and drawing 21, in a height direction, the auxiliary presser-foot roller 170 is held in the high position outside cassette insertion space with the auxiliary presser-foot cam pin 176 and the auxiliary presser-foot spring 172 of the main rack plate (S) 144, and it constitutes so that it may become neither cassette insertion nor an obstacle of extraction. As explained at the time of the M cassette 102, the auxiliary presser-foot mechanism 246 is located near the cassette presser-foot mechanism 127, and as shown in drawing 22, it avoids interference with the blinder panel 114. During the horizontal migration section, since the relative position relation of the electrode holder 119 and a main rack plate (S) is [the electrode holder 119] changeless, this state is held. If the vertical migration section comes, since the electrode holder 119 descends along with inclined groove (F) 144a of the main rack plate (S) 144, and inclined groove (R) 144b, it will rotate the auxiliary presser-foot board 173 clockwise with the auxiliary presser-foot cam pin 176. The auxiliary presser-foot roller 170 formed in the auxiliary presser-foot board 169 as a result contacts the upper surface of the L cassette 101, and the auxiliary presser-foot spring 172 develops and it becomes like drawing 1, drawing 24, and 25 because the auxiliary presser-foot board 173 rotates further. In the position which the auxiliary presser-foot mechanism 246 is having established such a moving mechanism, and takes out or inserts a cassette. It can store on about 177 cassette presser-foot axis, when actually operating, the position estranged from the cassette presser-foot axis 177 can be pressed down, the float of the L cassette 101, especially the back 101p (cassette back part) (drawing 25) can be prevented, and positive sticking by pressure and positioning can be performed. The height receptacle pin (L) 244 arranged in the four corners of the L cassette 101 as shown in drawing 25 receives height. At this time, the L cassette 101 receives the power of the vector Y1 with the cassette presser-foot mechanism 127, and receives the power of the vector Y2 with the auxiliary presser-foot mechanism 246. Distance is long to the back 101p of the vector Y1 and the L cassette 101. Therefore, it is not expectable to press firmly the back 101p side of the L cassette 101 by this vector Y1. However, since the vector Y2 of the auxiliary presser-foot mechanism 246 is close to the back 101p of the L cassette 101, it contributes the thrust from this vector Y2 to the press by the side of the back 101p greatly. Of course, this auxiliary presser-foot mechanism 246 is formed also in the take-up-reel side with the same composition. Since the vertical position of the connecting shaft 174 which is a rotation center of the auxiliary presser-foot roller 170 and the auxiliary presser-foot board 169 is almost the same at the time of the completion of sticking by pressure as shown in drawing 25. As shown in the vector Y, it works as vertical power of a cassette, and the moment added to the auxiliary presser-foot board 169 contributes to firm forcing to a cassette. The line and the cassette pressing direction P which connect the connecting shaft 174 and the auxiliary presser-foot axis 171 are abbreviated 90 degree, and a cassette can be most effectively pressed for the power of the auxiliary presser-foot spring 172. Since this cassette presser-foot roller 170 is not extended only to L cassette's 101 existence space, cassette press is possible only for the time of the L cassette 101. Fundamentally, the operation after cassette extraction instructions were emitted is the same as the case of the M cassette 102.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The cassette auxiliary pressing mechanism side view in the cassette record reproduction possible position of this invention

[Drawing 2]The top view of S, M, and L cassette

[Drawing 3]The lineblock diagram of the cassette holder device principal part

[Drawing 4]Cassette insertion opening Cassette non-insertion condition figure

[Drawing 5]Cassette holder outline view

[Drawing 6]The cassette auxiliary pressing mechanism lineblock diagram at the time of cassette insertion

[Drawing 7]The cassette auxiliary pressing mechanism lineblock diagram at the time of cassette insertion

[Drawing 8]The cassette auxiliary pressing mechanism lineblock diagram in a cassette ***** reproducible position

[Drawing 9]The cassette auxiliary pressing mechanism lineblock diagram in a cassette ***** reproducible position

[Drawing 10]The electrode-holder guide structure side view in cassette extraction (uninserted)

[Drawing 11]The electrode-holder guide structure side view in cassette extraction (uninserted)

[Drawing 12]The cassette holder top view in the phase which has a cassette in a record reproduction possible position

[Drawing 13]Cassette holder guide structure lineblock diagram

[Drawing 14]Cassette holder guide structure lineblock diagram

[Drawing 15]The lineblock diagram of the left lateral side of drive mechanism

[Drawing 16]The guide structure top view of an electrode holder

[Drawing 17]A main rack plate lineblock diagram on either side

[Drawing 18]The drive mechanism lineblock diagram which takes a right-and-left synchronization

[Drawing 19]an uninserted cassette S/M electrode-holder guide structure lineblock diagram

[Drawing 20]The top view of M cassette, a cassette presser-foot mechanism, and an auxiliary presser-foot mechanism

[Drawing 21]The side view of M cassette, a cassette presser-foot mechanism, and an auxiliary presser-foot mechanism

[Drawing 22]The cassette presser-foot mechanism in a cassette insertion position, an auxiliary pressing mechanism, a blinder lineblock diagram

[Drawing 23]The side view at the time of positioning of M cassette

[Drawing 24]The top view of L cassette, a cassette presser-foot mechanism, and an auxiliary presser-foot mechanism

[Drawing 25]The side view at the time of positioning of L cassette

[Drawing 26]The height arrangement area top view of a large-sized cassette and a small cassette

[Drawing 27]The top view of a large-sized cassette and a small cassette

[Description of Notations]

101 L cassette

101p Back

102 M cassette

103 S cassette

119 Electrode holder (cassette carrier)

127 Cassette presser-foot mechanism (1st cassette presser-foot mechanism)

144 Main rack plate (S) (driving member)

169 Auxiliary presser-foot board

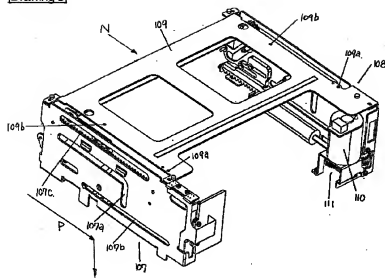
170 Auxiliary presser-foot roller

173 Auxiliary presser-foot board

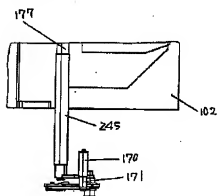
243 Height receptacle pin (height determining part material)

246 Auxiliary presser-foot mechanism (2nd cassette presser-foot mechanism)

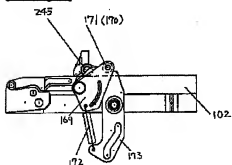
[Drawing 3]



[Drawing 20]

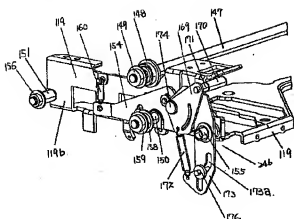


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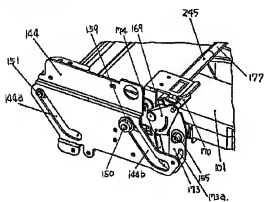


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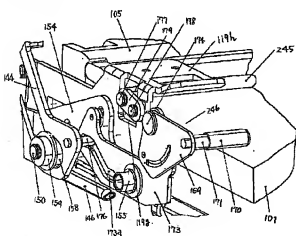
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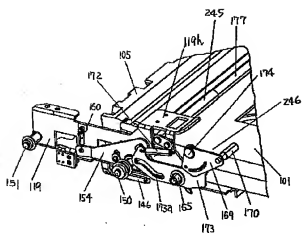
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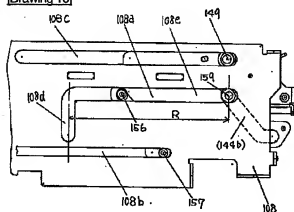
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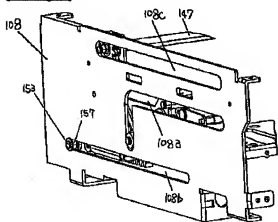
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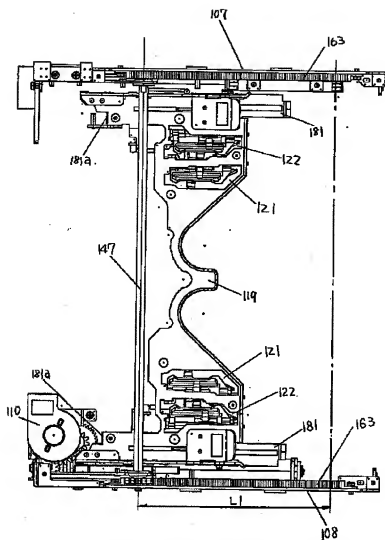
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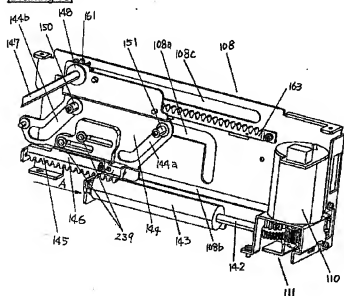
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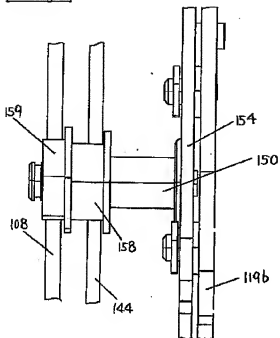
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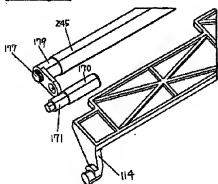
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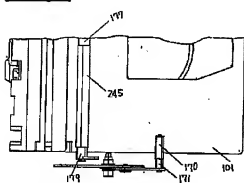
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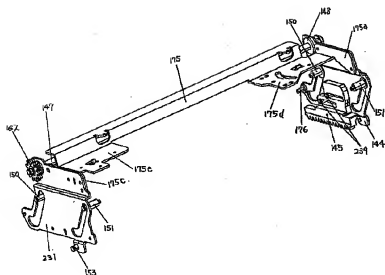
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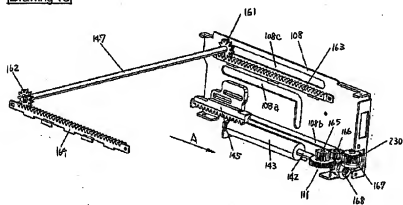
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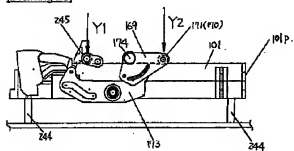
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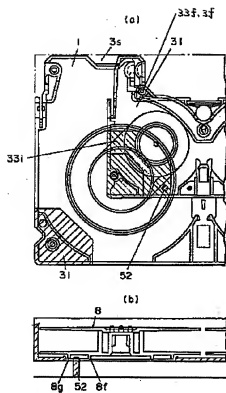
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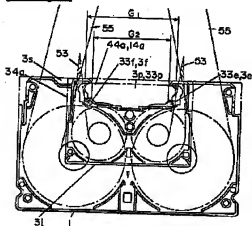
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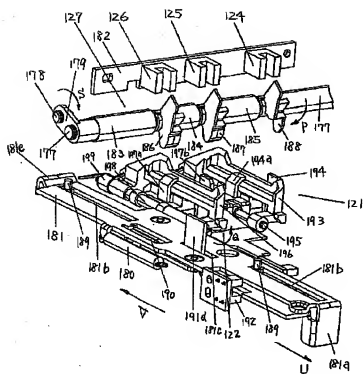
[Drawing 26]



[Drawing 27]



[Drawing 19]



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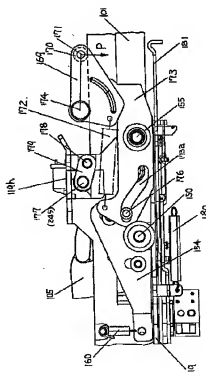
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(54) 【発明の名称】 カセットホルダー装置

(57) 【要約】

【課題】 サイズの大きなカセットであっても、小型カセットと大型カセットを混在して使用する装置であっても確実に大型カセットの高さ決め部材への強固な押圧を可能とするカセットホルダー装置を提供すること。

【解決手段】 ホルダー 1 1 9 に回転自在な補助押さえ基板 1 7 3 と、その補助押さえ基板 1 7 3 にさらに回転自在に支持された補助押さえ板という構成で、駆動部材により補助押さえ基板 1 7 3 を回転させて、補助押さえローラ 1 7 0 をカセット押さえローラ 2 4 5 から離間させカセットの背面側を押圧して、確実に押圧力が働くようにする。



【特許請求の範囲】

【請求項1】 カセットを取り出し可能な第1の位置から記録再生可能な第2の位置へ案内するカセットキャリアと、前記カセットを前記第1の位置では前記カセットキャリアに対して押圧保持し前記第2の位置では前記カセットを高さ決め部材に圧接する第1のカセット押さえ機構と、前記カセットを前記第1のカセット押さえ機構よりも前記カセットの背面部に近い位置で前記高さ決め部材に圧接する第2のカセット押さえ機構を有するカセットホルダー装置。

【請求項2】 小型カセットと大型カセットを選択的に装着できるカセットホルダー装置であって、前記大型カセット及び小型カセットを取り出し可能な第1の位置から記録再生可能な第2の位置へ案内するカセットキャリアと、前記大型カセット及び前記小型カセットを前記第1の位置では前記カセットキャリアに対して押圧保持し前記第2の位置では前記大型カセット及び前記小型カセットを高さ決め部材に圧接する第1のカセット押さえ機構と、前記第1の位置では前記第1のカセット押さえ機構に近接した位置に保持され前記第2の位置では前記第1のカセット押さえ機構より離間して前記大型カセットの背面部に近い位置で前記大型カセットを前記高さ決め部材に圧接する第2のカセット押さえ機構を有するカセットホルダー装置。

【請求項3】 小型カセットと大型カセットを選択的に装着できるカセットホルダー装置であって、前記大型カセット及び小型カセットを取り出し可能な第1の位置から記録再生可能な第2の位置へと水平移動と垂直移動とを案内するカセットキャリアと、該カセットキャリアが前記第1の位置から前記第2の位置へ移動する間水平方向にのみ移動する駆動部材と、前記小型カセット及び大型カセットを前記第1の位置では前記カセットキャリアに対して押圧保持し前記第2の位置では前記小型カセット及び大型カセットを高さ決め部材に圧接する第1のカセット押さえ機構と、前記カセットキャリアに回動自在に支持され前記駆動部材に係合して前記大型カセットを前記第1の位置では前記第1のカセット押さえ機構に近接した位置に保持され前記第2の位置では前記第1のカセット押さえ機構より離間して前記大型カセットの背面部に近い位置で前記高さ決め部材に圧接する第2のカセット押さえ機構を有するカセットホルダー装置。

【請求項4】 前記第2のカセット押さえ機構が前記カセットキャリアに回動自在に支持された補助押さえ基板と、補助押さえ部材を有し該補助押さえ基板に回動自在に支持された補助押さえ部材と前記補助押さえ部の回動中心がほぼ同じ高さとした請求項3に記載のカセットホルダー装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、記録再生装置などに使用されるテープカセットを記録再生可能な位置へ案内するカセットホルダー装置に関する。

【0002】

【従来の技術】カセットサイズの異なる複数のカセットを選択的に使用する装置においては、大型カセット及び小型カセットの大きさの差、特に奥行き方向の差を起因としてカセット取り出し時におけるユーザーの適切な掴み代の確保が問題となる。小型カセットに十分な掴み代を確保しようと設定すると、カセットホルダーは、よりカセット挿入口に近接した位置まで移動させなければならない。そうすると、カセットホルダー内に設けられるカセット上面を押圧するカセット押さえ機構はカセットの前面蓋により近い位置に限定されてしまう。一例としてすでに規格化された商品化も進んでいるデジタルビデオカセットについて説明する。図2にデジタルビデオカセット（以下単にカセット）として規格化されている大小2種類のカセットを記録再生可能な位置において重ねて配置した平面図がある。大型カセット（Lカセット）1と小型カセット（Sカセット）31は、位置決め孔3e、3f、33e、33fで位置決めされたと図27のような配置となる。ポスト等が進入可能な開口部3p、33pが同じ位置になるものの、リール位置はそれぞれ異なる。この様にサイズの異なるカセットの記録再生装置での位置決めは、位置決め孔3e、3f、33e、33fに設けられた位置決めピンとその他に高さを支持する高さ決めピンとからなる。図26に示すハッチング31、331は高さ決めピンが配置できる領域を示す。Sカセット31もLカセット1もカセット上面から強固に押圧されることでこのカセットの位置決めがなされる。そのカセット押さえは、一般的にカセットを保持して取り出し位置から記録再生可能位置に搬送するホルダーに設けられており、カセットをホルダーに挿入するこのカセット押さえ部材により、ホルダーに対して付勢される付勢力でカセットを保持している。複数のカセットを扱う装置でも同じである。よって、そのカセット押さえの位置は大小カセットの共通位置となる。最終記録再生位置に位置決めされたときを考えると、そのカセット押さえの位置は図26の位置決め孔33fとハッチング部331間となる。しかし、これだけカセットの大きさが異なると、そのカセット押さえの位置はSカセット31では最適な位置かもしれないが、Lカセット1では、あまりにも位置決め孔33fに近接しすぎて、ハッチング部331の高さ決めピンに対する付勢力が弱くなる。そこで、カセット押さえの位置をカセット位置決め時には後方へ移動するメカも提案されているが、単独のカセット扱うメカでは可能なことだが、複数のカセットを扱うメカでは、カセットの種別を検知してその種別によりカセット押さえ機構を後方に移動させるか、そのままの位置を維持するかを選択することは非常に難しい。

【0003】

【発明が解決しようとする課題】本発明が解決を図るための第1の課題は、従来のカセットホルダー装置がこの様なサイズの大きいカセットを強固に位置決め部材に付勢できない点である。本発明の第1の目的は、上記の問題点を解決するために成されたものであり、記録再生位置においてカセットを強固に位置決め部材に付勢するカセットホルダー装置を提供するものである。

【0004】本発明が解決を図るための第2の課題は、従来のカセットホルダー装置が複数のカセットを選択的に使用する装置において小型カセットでは最適の付勢力を得られても大型カセットでは十分な付勢力を得られない点である。本発明の第2の目的は、上記の問題点を解決するために成されたものであり、それぞれのカセットに最適な付勢力が得られるカセットホルダー装置を提供するものである。本発明が解決を図るための第3の課題は、従来のカセットホルダー装置がサイズの異なるカセットを選択的に装着させたときに、それぞれのカセットに必要な押圧力を出すカセット押さえ機構を合理的な手段として提案できなかった点である。本発明の第3の目的は、上記の問題点を解決するために成されたものであり、合理的なカセット押さえ機構を備えたカセットホルダー装置を提供するものである。

【0005】

【課題を解決するための手段】第1の課題を解決するための、本発明の第1の手段は、カセットの前方に位置する第1のカセット押さえと後方に位置する第2のカセット押さえと、第1と第2のカセット押さえで、カセットを高さ決め部材に強固に押圧することができ、

【0006】第2の課題を解決するための、本発明の第2の手段は、カセット取り出し位置では第1のカセット押さえに対して近接した位置にあり、記録再生可能位置では第1のカセット押さえから離間して前記背面部に近い位置にあるようにして、カセット取出しでは限られたスペースの中に収納し、カセット位置決め時は第1から離れてカセット背面側により強固に押圧するようにした。第3の課題を解決するための、本発明の第3の手段は、水平及び垂直に移動するカセットに対して水平移動のみを行う駆動部材の構成で、垂直移動時のカセットと駆動部材の相対移動時に、第2のカセット押さえを第1の位置から第2の位置に移動させるようにした。

【0007】

【発明の実施の形態】本発明の請求項1に記載の発明は、カセットを取り出し可能な第1の位置から記録再生可能な第2の位置へ案内するカセットキャリアと、前記カセットを前記第1の位置では前記カセットキャリアに対して押圧保持し前記第2の位置では前記カセットを高さ決め部材に圧接する第1のカセット押さえ機構と、前記カセットを前記第1のカセット押さえ機構よりも前記カセットの背面部に近い位置で前記高さ決め部材に圧接

する第2のカセット押さえ機構を有するカセットホルダー装置であって、第1のカセット押さえ機構でカセットキャリアにおける保持機能を果たし、第1及び第2のカセット押さえ機構で記録再生位置で高さ決め部材に強固に押圧するという作用を有する。

【0008】本発明の請求項2に記載の発明は、小型カセットと大型カセットを選択的に装着できるカセットホルダー装置であって、前記大型カセット及び小型カセットを取り出し可能な第1の位置から記録再生可能な第2の位置へ案内するカセットキャリアと、前記大型カセット及び前記小型カセットを前記第1の位置では前記カセットキャリアに対して押圧保持し前記第2の位置では前記大型カセット及び前記小型カセットを高さ決め部材に圧接する第1のカセット押さえ機構と、前記第1の位置では前記第1のカセット押さえ機構に近接した位置に保持され前記第2の位置では前記第1のカセット押さえ機構より離間して前記大型カセットの背面部に近い位置では前記第1のカセット押さえ機構に圧接する第2のカセット押さえ機構を有するカセットホルダー装置であって、第2のカセット押さえを取り出し可能位置では第1のカセット押さえ機構の近傍に収納してコンパクトに構成し、記録再生可能位置では第1のカセット押さえ機構から離間してカセット背面に近い位置を押さえるようにして、より効果的なカセット押さえとするという作用を有する。本発明の請求項3に記載の発明は、小型カセットと大型カセットを選択的に装着できるカセットホルダー装置であって、前記大型カセット及び小型カセットを取り出し可能な第1の位置から記録再生可能な第2の位置へと水平移動と垂直移動させ案内するカセットキャリアと、該カセットキャリアが前記第1の位置から前記第2の位置へ移動する間水平方向にのみ移動する駆動部材と、前記小型カセット及び大型カセットを前記第1の位置では前記カセットキャリアに対して押圧保持し前記第2の位置では前記小型カセット及び大型カセットを高さ決め部材に圧接する第1のカセット押さえ機構と、前記カセットキャリアに回転自在に支持され前記駆動部材に係合して前記大型カセットを前記第1の位置では前記第1のカセット押さえ機構に近接した位置に保持され前記第2の位置では前記第1のカセット押さえ機構より離間して前記大型カセットの背面部に近い位置で前記高さ決め部材に圧接する第2のカセット押さえ機構を有するカセットホルダー装置であって、水平移動の駆動部材と垂直移動するカセットによって相対移動することを利用して、第2のカセット押さえを第1のカセット押さえ機構に対して近接離間させるという作用を有する。

【0009】以下、本発明の実施形態について、図面を用いて説明する。記録フォーマットが同じであるが記録時間の異なる複数のカセットを使用するシステムがいくつか存在する。本発明の実施例の場合もこの様なシステムの1つで、例えばサイズの異なる3つのカセット使用

する場合として以下説明を進める。3つのカセットは、サイズの大きいほうからLカセット、Mカセット、Sカセットと以下称する。まずこの3つのカセットは、記録時間に対応してテープ長が異なり、結果リールへのテープ巻径がそれぞれ異なる。そのため、2つのリールのリール間ピッチもまたそれぞれ異なる。大型カセットであるLカセット101は前方中央部に2個の共通の位置決め孔101b、101cを有している。他のカセットも同じ位置決め孔を有しており、この位置決め孔を共通位置にして3つのカセットを配置すると、図2に示すように、供給リール101gと巻き取りリール101h間に架張されたテープを引き出すための引き出しポストが挿入可能な開口部101a、102a、103aが3つのカセットではほぼ同じ位置となる。これらの3つのカセットは、いずれも同じ厚さで構成されている。しかし図からわかるように、小型カセットのMカセット102はLカセット101の空間内にあり、Sカセット103はMカセット102の空間内にある。また、左右方向では、中心線Yを中心に左右同一幅である。この図では、前面に架張する磁気テープを覆うフロントリッドを図示していないが、このフロントリッドを閉じた状態にロックするフロントリッドロック爪は、各カセットの前方左右位置101d、101e、102d、102e、103d、103eにそれぞれ存在する。Lカセット101の四隅に示すハッチングの高さ決めエリア101j、101k、101m、101nは記録再生装置側に設けられる高さ決めピンを配置可能なエリアである。同様に102j、102k、102m、102nはMカセット102の高さ決めピン配置可能なエリアである。また103j、103k、103m、103nはSカセット103の高さ決めピン配置可能なエリアである。Mカセット102とSカセット103の一部の高さ決めピンエリアは重複している。よって、この重複した位置に高さ決めピンを構成すれば共通の高さ決めピンとすることができる。このような構成のLカセット101、Mカセット102、Sカセット103をユーザーが取り出し可能な位置（取り出し可能な第1の位置）から記録再生可能な位置（記録再生可能な第2の位置）へそれぞれ直接案内が可能なカセットホルダー機構の構成を図3以降説明する。図3は、このカセットホルダー機構の概観図で、主に全体の駆動機構を示している。機構は、左右に右側板107、左側板108と天面に天板109を備えてなる。左側板108に駆動源であるモータ10を含まない歯車機構111が構成されている事を除けば左側板108も右側板107と基本的には同じような構成を成している。後述するメインホルダーを案内するL字溝107aとスライド孔107b、107cを備える。天板109は、4本のネジ152によって、右側板107、左側板108に固定されている。Lカセット101、Mカセット102、Sカセット103はN方向から挿入、または、取

り出しが可能となっている。カセットを保持したメインホルダーは、これらカセットを保持して取り出し及び挿入が可能な第1の位置から図示するP方向にまず水平に移動し、その後垂直に移動を行う。これによって、カセットを所定位置に強固に位置決めし、内包する磁気テープを引き出し、記録再生可能な第2の位置に移行することが出来る。無論、カセット取り出しは、矢印Pとは逆方向にまず上昇し、水平に後退後、Nの方向からユーザーが取り出すことが可能となる。カセットの取り出しや、挿入を行うカセット挿入案内機構112が図4である。図4の状態は、カセットが装置に装着される以前の状態である。挿入案内機構112には、Lカセット101の横幅G3の幅とLカセット101の厚さよりも若干大きい高さの開口部を有するフロントパネル113とその開口部を覆うブラインドパネル114補助ブラインド115が、設けられている。またSカセット103の横幅G3を挟んで両サイドにSカセットガイド機構116、Mカセット102の横幅G2を挟んで両サイドにMカセットガイド機構117が配置されている。Sカセットガイド機構116及びMカセットガイド機構117は、左右に対称形状構成であり、それぞれ左右連動して上下に移動可能に構成されている。フロントパネル113は、中央部上下にくぼみ113a、113bを形成しているが、これは、カセットを掴みやすくするためのものである。図5は、Lカセット101、Mカセット102、Sカセット103を保持して記録再生位置と取り出し可能位置間を往復動作するメインホルダー機構118である。メインホルダー機構118は、コの字形のカセットキャリアであるホルダー119とホルダー119の右側板部119a、左側板部119bを連結するスイッチ基板120とからなる。ホルダー119には、Sカセット103の横幅G3を挟んで両サイドにSホルダーガイド機構121、Mカセット102の横幅G2を挟んで両サイドにMホルダーガイド機構122が構成されている。またLカセット101は、右側板部119a、左側板部119bによって案内されるが、Lカセット101に係合して前後に移動するサブホルダー機構123が右側板部119a、左側板部119bの近傍に設けられている。また、右側板部119a、左側板部119bにカセットを下方に押圧するカセット押さえ機構127（第1のカセット押さえ機構）が回転自在に構成されている。スイッチ基板120には、Sカセット103、Mカセット102、Lカセット101をそれぞれ検出可能なSカセット検知スイッチ124、Mカセット検出スイッチ125、Lカセット検出スイッチ126が、設けられている。次に駆動機構を説明する。図15に示す様に、モータ110の出力は、歯車機構111を介してウォーム軸142に伝えられる。ウォーム軸142は、両端を回転自在に支持され、中央部でウォーム歯車143を一体的に構成している。このウォーム歯車143にはラッ

クが備合している。このラックは、相手がウォームであるため、ウォームの進み角だけねじれ角を有したいいわゆるハスパ歯形となっている。つまりラックはハスパラック145なのである。これで、ウォームとラックという組み合わせながら、スムーズに駆動力の伝達が可能である。このハスパラック145は、駆動部材であるメインラック板(S)144に植設された2本のハスパラック軸239にガイドされてスライド自在に支持されている。そして、ラックパネ146により、ハスパラック145はA方向に付勢されている。メインラック板(S)144には、傾斜溝(F)144a、傾斜溝(R)144bと中央上部に同期軸147を回転自在に支持するための軸受け148を備えている。左側板108にはL字溝108aと2本のスライド孔108b、108cが構成されているが、図13、14にも示す様にスライド孔108cには、同期軸147に回転自在に支持された同期軸カラー149が係合している。さらにL字溝108aには、図16に示すようにホルダー軸A150がメインラック板(S)144の傾斜溝(R)144bを貫通して係合している。ホルダー軸A150にはホルダー軸カラー158、159が構成されており、158はメインラック板(S)144の傾斜溝(R)144bに、159はL字溝108aに係合している。このホルダー軸A150は、図6にあるようにホルダー119にボスA155の位置に回転自在に支持された圧着板154に植設されている。圧着板154は、一端に係合した圧着パネ160によって時計方向に付勢されて、図6の状態に圧着板154の一部がホルダー119に当接して位置が規制されている。図17及び18にて、駆動機構をさらに詳細に説明する。モータ110の出力軸に固着されたモータギア165、中継ギア166、出力ギア230、カサ歯車(A)167、カサ歯車(B)168と連結しており、モータ出力が伝達されていく。出力ギア230とカサ歯車(A)167は一体的に構成されている。カサ歯車(A)167とカサ歯車(B)168は90度の角度で噛み合っている。カサ歯車(B)168は、ウォーム軸142に圧入されており、ウォーム歯車143と一体的に回転する。同期軸147の両端には差動ギア(S)161と差動ギア(T)162が一体的に構成されている。そして、それぞれ、右側板107と左側板108に固定された、固定ラック(S)163と固定ラック(T)164に備合している。

【0010】ハスパラック145とともにメインラック板(S)144が移動すると、メインラック板(S)108に設けられた軸受け148によって同期軸147が移動させられる。この時に同期軸147に差動ギア(S)161が一体的に構成されているために、固定ラック(S)163によって差動ギア(S)161と同期軸147は回転させながら移動する、つまり転動することとなる。その回転力は、差動ギア(T)162に伝達

され、その回転力で、固定ラック(T)164に対して相対的に移動する力となり、同期軸147の差動ギア(T)162側を移動させる。その結果、同期軸147を支持するメインラック板(T)231を移動させる。このようにして、左右のメインラック板(S)144(T)231は同期して移動することが出来る。メインラック板(S)144とメインラック板(T)231は、蹴り出しプレート175のラック固定部175a、175cにネジ固定されているために、左右のメインラック板(S)144(T)231と蹴り出しプレート175と一体構成である。

【0011】一方図6、7は、カセットをユーザーが取り出し可能な状態を示す。図示するようにホルダー119に植設されたホルダー軸B151は、同様にメインラック板(S)144の傾斜溝(F)144aにのみホルダー軸カラー156を介して係合している。メインラック板(S)144に植設されたラック板軸153が、同様にラック板カラー157を介してスライド孔108bに係合している。

【0012】図10にもある様にメインラック板(S)144の同期軸147に支持された同期軸カラーとラック板軸153に支持されたラック板カラー157の2つのローラが左側板108のスライド孔108b、108cにそれぞれ係合しているため、左側板108に対するメインラック板(S)144の姿勢が保持されている。

【0013】そして、図11にあるようにメインラック板(S)144の傾斜溝(F)144aと傾斜溝(R)144bにホルダー軸A150のホルダー軸カラー158とホルダー軸B151のホルダー軸カラー156が係合しているためホルダー119はメインラック板(S)144に対して傾斜溝(F)144a、傾斜溝(R)144bに沿ってスライド自在に保持されている。その一方で、ホルダー軸A150のホルダー軸カラー159は、さらに左側板108のL字溝108aにも係合している。そのため図10で示すようにこのL字溝108aと傾斜溝(R)144bが交差した位置にホルダー軸A150は保持される。ホルダー軸B151の位置は、傾斜溝(R)144bの範囲内において位置が一義的に決まる。よって、ホルダー119もまた、左側板108に対して姿勢が規制されることとなる。つまり、左側板108に対して前後にスライド自由に保持されているメインラック板(S)144の位置によってホルダー119の姿勢及び位置が規定される。特にホルダー軸カラー159がL字溝108aの水平部にある区間(図10のRの範囲)では、ホルダー119は、メインラック板(S)144と一体的に動く。Rの範囲を超えると、ホルダー119は、傾斜溝(F)144a、傾斜溝(R)144bに沿って、下降していく。

【0014】Lカセット101は、サイズが最も大き

く、通常のカセット押さえでは十分なカセット押さえ力が発生しない。よって、Lカセットのみ、カセット後方を補助的に押さえる補助押さえ機構246（第2のカセット押さえ機構）を設けている。

【0015】この機構について図6、7、8、9で説明する。補助押さえ基板173に設けられたボスA155は、ホルダー119の左側板部119bに植設された軸（図示せず）に嵌合し、補助押さえ基板173を回転自在に支持している。補助押さえ基板173には、メインラック板（S）に植設された補助押さえカムピン176に係合するカム部173aが一端に形成されている。他端には、連結軸174を介して補助押さえ板169が回転自在に支持されている。この補助押さえ板169には、補助押さえローラ170（補助押さえ部材）を備えた補助押さえ軸177が設けられている。また補助押さえ板169と補助押さえ基板173間には補助押さえバネ172によって形成されているため、この補助押さえバネ172によって外部からの力が加わらない状態では、図6に示す位置関係で補助押さえ板169の位置と姿勢は保持される。なおこの補助押さえ機構246は、カセット両側に左右対称に構成されている。図19によってメインホルダー機構の詳細について説明する。Mホルダーガイド機構122の側部には、サブホルダー機構123が設けられている。サブホルダー機構123は、ホルダー119の底面に配置され、2本のホルダーガイドピン189によってホルダー119に対して前後にスライド自在に支持された中継部材であるサブホルダープレート181と、そのサブホルダープレート181に対してスライド自在に支持されたサブカセットキャリアであるリッドロック解除爪レバー191からなる。サブホルダー181は、通常サブホルダーバネ180によって、U方向に付勢されている。また、リッドロック解除爪レバー191は、Lカセット101のフロントリッド105のロックを行うフロントリッドロック爪104に相対してロックを解除するロック解除爪191dをサブホルダープレート181及びホルダー119を貫通してカセット空間に露出している。そして、解除爪バネ190によってサブホルダープレート181に対してV方向に付勢されている。よって通常は、サブホルダープレート181は、ホルダーガイドピン189にガイド孔181bの一端が係止した図19の位置関係にある。カセット押さえ機構127についてさらに詳細に説明する。192は、Lカセットが挿入されたことを報知するL挿入検知スイッチ（カセット位置検知スイッチ）である。図19に示すようにホルダー119の左側面119b及び右側面119aに植設されたアーム支軸178に回転自在に支持されたカセット押さえアーム179が構成されている。カセット押さえ軸177の両端部をカセット押さえアーム179が支持しており、図示しないバネにより図19のS方向に付勢されて図8のホルダー119の

当接部119gにカセット押さえ軸177の一部が当接している。カセット押さえ軸177には、Lカセット101を押さえるL押さえローラ183、Mカセット102を押さえるM押さえローラ184、Sカセット103を押さえるS押さえローラ185が回転自在に構成されている。同様にカセット押さえ軸177の供給リール側にはカセット押さえローラ245が回転自在に支持されている（図22）またカセット押さえ軸177には、カセットの種別を検出する回転自在を検出アームである、L検出アーム186、M検出アーム187、S検出アーム188が構成されている。これら検出アームは図23のP方向に図示しないバネにより付勢されている。この検出アームに対応してLカセット検知スイッチ126、Mカセット検知スイッチ125、Sカセット検知スイッチ124が検知スイッチ基板182に固定されて設けられている。

【0016】以上の構成のカセットホルダー機構についてその動作を以下説明する。Mカセット102をカセット取り出し位置から記録再生位置に案内する場合について説明する。図4の状態、Mカセット102を挿入する。Mカセット102の横幅は、G2である。よって、Mカセットガイド機構117に沿って案内されながら挿入することとなる。このMカセット102の挿入で、Mカセット102の上面部によりカセット押さえ機構127のカセット押さえ軸177に回転自在に支持されたM押さえローラ184、カセット押さえローラ245が、図8に示すように図示しないバネに抗してアーム支軸178を中心に時計方向に回転させられ、結果Mカセット102をホルダー119の底面に対して弾性的に付勢する。この付勢力でMカセット102をホルダー119は保持し、以降のホルダー119の移動にMカセット102を一体的に動かすことができる。一方図20及び21のように、第2のカセット押さえ機構である補助押さえ機構246の補助押さえローラ170は平面的に（図20）Mカセット102の存在空間外にありかつ、図21の側面図に示すように高さ方向においてもカセット空間外にある。よって、Mカセット102の挿入には関与しない。また、図22にMカセット102が挿入された時のカセット押さえ機構127のカセット押さえローラ245、カセット押さえアーム179、補助押さえ機構246の補助押さえ軸171、補助押さえローラ170、ブライндаパネル114の関係を示したが、補助押さえローラ170はカセット押さえローラ245の近傍にありMカセット102の挿入により開放されたブライнда114とは干渉しない。Mカセット102がホルダー119の所定の位置への挿入が完了すると、モータ110に通電されモータギア165、中継ギア166、カサ歯車（A）167、カサ歯車（B）168、ウォーム歯車143へと回転力が伝達される。ウォーム歯車143の回転によって、これに噛み合うハスバック14

5をA方向(図15、18)に移動させる。ハスパラック145とともに、ハスパラック軸239を介してメインラック板(S)144も一体的にA方向に移動させる。メインラック板(S)144は構成された軸受け148を介して同期軸147をもA方向に移動させる。メインラック板(S)144は、この同期軸147とラック板軸153が左側板108のスライド孔108b、108cに係合しているものでそのスライド孔に沿って水平に(A方向に)移動する。同期軸147は、差動ギア(S)161と固定ラック(S)163により回転しながらA方向へ進むことになり、いわゆる転動という動きをする。このため、同期軸147を介して、差動ギア(S)161の相対した位置にある差動ギア(T)に回転力を伝達する。差動ギア(T)161と固定ラック(T)により、差動ギア(T)側もA方向に進進する推力を得る。これが、メインラック板(T)231をA方向に移動させる力となる。よって、メインラック板(S)144とメインラック板(T)231は、同期してA方向に進むことが可能となる。そうして水平方向に移動し、図10に示すメインラック板(S)144が寸法Rだけ進んだ後、さらに進むと、ホルダー軸カラー159は、左側板108のL字溝108aの水平溝108eを超えて垂直溝108dに至る。この垂直溝108dに沿って降下し始める。図11の如くメインラック板(S)144は、傾斜溝(R)144bが形成されており、この溝にホルダー軸カラー158が係合しているため、メインラック板(S)144に対しては、この傾斜溝(R)144bに沿って降下することとなる。この降下に合わせて、ホルダー軸カラー156も傾斜溝(F)144aに沿って降下する。この時に傾斜溝(R)144bと傾斜溝(F)144aは平行な傾斜溝なので、ホルダー119は平行な姿勢を維持して降下する。やがて、傾斜溝(R)144bを超えると水平な溝である圧着溝144cに至る。この圧着溝144cの高さ方向の位置は、ホルダー119も垂直移動ストロークよりも大きくしてある。Mカセット102は、図23に示す高さ受けピン243(高さ受け部材)で高さが決まるとそれ以上は降下ができない。さらにホルダー119だけ降下していくとMカセット102の上面を押圧しているカセット押さえ軸177が、図8に示すホルダー天面部119hに当接してそれ以上降下はできなくなる。つまりMカセット102の降下ストロークよりも若干ホルダー119のストロークの方が大きくしてあるが、そのホルダー119の垂直ストロークよりも圧着溝144cの位置を下げた。よってホルダー119は停止した後、ホルダー軸カラー158が圧着溝144cに沿って押し下げられるので、ホルダー軸カラー158を支持しているホルダー軸A150も降下し、ホルダー軸A150を植設している圧着板154は、ボスA150を中心反時計方向に回転する。その事で、圧着パネ160

が引き伸ばされ、ホルダー119を下方に圧接させる。この圧接力は、ホルダー119からカセット押さえ軸171を介してMカセット102をより強固に高さ決めピン243に圧接させる力となる。こうして、Mカセット102は図23に示す如く記録再生可能な位置に位置決めされる。Mカセット102はカセット押さえローラ243及びM押さえローラ184で矢印の位置で下方に圧接を受ける。これに対してMカセット102は高さ受けピン243が4本カセット四隅近傍に配置され高さを維持する。ベクトルYは2つの高さ受けピンのほぼ中央部にあり、両高さ受けピンに均等に押圧され確実に位置決めされる。一方補助押さえ機構246の補助押さえ板173は図21の状態から略90度時計方向に回転するが、図20に示すように補助押さえローラ170がMカセット102の存在空間外にあるために、この回転でも補助押さえ機構246はMカセット102に作用しない。よってMカセット102に生じる圧接力はベクトルYだけである。この位置決め完了位置では、図12の如く配置となる。同期軸147は、ホルダー119が水平に移動する必要なストロークと、傾斜溝(R)144b及び圧着溝144cに沿って移動するのに必要なストロークを加えたストロークだけ前方に移動する。カセット出し指令が発せられると、モータ110が逆に回転して、歯車機構111を介してウォーム歯車143を回転させ、ハスパラック145を図18の矢印Aとは逆方向に移動させる。こうして、ホルダー119は左側板108のL字溝に沿って上昇を開始する。それと連動してカセット送り出し機構241の遊星アーム216が逆進カム227に沿って時計方向に回転しながら後退してくる。上昇動作が完了して水平動作に移るときに遊星アーム216は、逆進アーム227から離れて、パネ力により送り出しローラ218がMカセット102のフロントリッドに当接して位置が決まる。

【0017】次に最も大きなカセットであるLカセット101を押入した場合について説明をする。これについても基本的な動作は、Mカセット102の場合と同じであるが、重複を避けるために、異なる部分を中心に説明を進める。まず、Lカセット101をカセット開口部に挿入すると、Lカセット101の天面にカセット押さえ軸177のL押さえローラ183及びカセット押さえローラ245が作用して、Lカセット101をホルダー119に押し付けている。カセット押さえ軸177に設けられたL検出アーム186、M検出アーム187、S検出アーム188はすべて回転しLカセット検知スイッチ126、Mカセット検知スイッチ125、Sカセット検知スイッチ124は、信号がHからLに切り替わる。この情報で挿入されたカセットがLカセットであることが電気的わかる。その後、Lカセット101をカセット押さえ機構127が高さ受けピン243に圧着させる動作は、Mカセット102と同じなので、割愛する。Lカセ

ット101の場合補助押さえ機構246が作用するのでその機構について、以下説明する。Lカセット101を挿入する時には、図6、7、図21に示すように、メインラック板(S)144の補助押さえカムピン176と補助押さえバネ172によって高さ方向において補助押さえローラ170をカセット挿入空間外の高い位置に保持して、カセット挿入や取り出しの障害とならないように構成している。またMカセット102の時に説明したように補助押さえ機構246はカセット押さえ機構127の近傍に位置して図22に示すようにブラインドパネル114との干渉を避けている。ホルダー119が水平移動区間中は、ホルダー119とメインラック板(S)144の傾斜溝(F)144aと傾斜溝(R)144bに沿って下降してくるので、補助押さえカムピン176によって、補助押さえ基板173は、時計方向に回転する。その結果補助押さえ機構169に設けられた補助押さえローラ170は、Lカセット101の上面に当接し、さらに補助押さえ基板173が回転することで、補助押さえバネ172が伸長して図1、図24、25のようになる。補助押さえ機構246は、この様な回転機構をもうけていることで、カセットを取り出したり挿入したりする位置では、カセット押さえ軸177近傍に収納し、実際に動作するときはカセット押さえ軸177から離れた位置を押さえることができ、Lカセット101の特に背面101p(カセット背面部)

(図25)の浮きを防止して確実な圧着と位置決めを行うことができる。図25に示すようにLカセット101の四隅に配置された高さ受けピン(L)244で高さを受ける。この時にLカセット101はカセット押さえ機構127によりベクトルY1の力を、補助押さえ機構246によりベクトルY2の力を受ける。ベクトルY1とLカセット101の背面101pまで距離は長い。よってこのベクトルY1でLカセット101の背面101p側を強固に押圧することは期待できない。しかし補助押さえ機構246のベクトルY2はLカセット101の背面101pに近いので、このベクトルY2からの圧圧力は背面101p側での圧圧に大きく寄与する。無論この補助押さえ機構246は、巻き取りリール制にも同一の構成で設けられている。また圧着完了時には、図25に示すように、補助押さえローラ170と補助押さえ板169の回転中心である連結軸174の高さ位置がほぼ同じで、補助押さえ板169に加わるモーメントはベクトルY1に示す如くカセットの垂直な力として働き、カセットへの強固な押し付けに寄与する。連結軸174と補助押さえ軸171とを結ぶ線とカセット押圧方向Pが略90度となっており、補助押さえバネ172の力を最も効果的にカセットを押圧することができる。なお、このカセット押さえローラ170は、Lカセット101の存在空

間までしか延伸させていないので、Lカセット101のときのみカセット押圧が可能となっている。カセット取り出し指令が発せられた後の動作も基本的には、Mカセット102の場合と同じである

【0018】

【発明の効果】以上のように請求項1に記載の発明によれば、従来のカセット押さえ機構と共に、カセット背面部に近い位置に補助押さえ機構を新たに設けたので、サイズの大きなカセットを確実に記録再生装置の高さ決め部材に押圧することができる。特にデジタルビデオカセットなどのようにカセット背面部に接触式のメモリ検出部や誤消去検出部などの大きな負荷のあるシステムには効果が大きい。請求項2に記載の発明によれば、補助押さえ機構がカセット取り出し位置ではカセット押さえ機構の近傍にあり占有体積を小さくしている。よってカセット挿入口を覆うブラインドパネルなどとの干渉を避けて、この位置における他のメカニズムの設計を容易にしている。そして記録再生装置への位置決め時には、補助押さえ機構はカセット押さえ機構からカセットの背面方向に大きく離間して、補助押さえ機構によるカセットへの押圧ポイントを大きくカセット背面側に移動させて、カセット背面側の押圧力を大きくし、カセットをその四隅の高さ受けピンに強固に押圧することができる。請求項3に記載の発明によれば、補助押さえ機構をカセットホルダーに構成して水平移動する駆動部材との間で相対的な運動が生じるカセット垂直移動によって補助押さえ機構を作動させる方式としたので、補助押さえ機構をカセット押さえ機構から離間させかつカセット押圧するという大きな出力を必要とする動きに對して入力もカセットの垂直移動という大きな入力のため補助押さえ機構が駆動に与える負荷も少なくすむ。軽負荷で大きな出力を得ることができる。

【0019】請求項4に記載の発明によれば、圧着完了時には、補助押さえローラ170と補助押さえ板169の回転中心である連結軸174の高さ位置がほぼ同じで、補助押さえ板169に加わるモーメントはカセットの垂直な力として働き、カセットへの強固な押し付けに寄与する。つまり、補助押さえ板169に回転モーメントを与える補助押さえバネ172の力を効率的にカセット押さえ力に変換させることができる。逆説的に言えば、モータへの負荷が少なくすむ。

【図面の簡単な説明】

- 【図1】本発明のカセット記録再生可能位置でのカセット補助押圧機構側面図
- 【図2】S、M、Lカセットの平面図
- 【図3】カセットホルダー装置主要部の構成図
- 【図4】カセット挿入開口部 カセット未挿入状態図
- 【図5】カセットホルダー外観図
- 【図6】カセット挿入時のカセット補助押圧機構構成図
- 【図7】カセット挿入時のカセット補助押圧機構構成図

【図8】カセット挿記録再生可能位置でのカセット補助押圧機構構成図

【図9】カセット挿記録再生可能位置でのカセット補助押圧機構構成図

【図10】カセット取り出し（未挿入）でのホルダーガイド機構側面図

【図11】カセット取り出し（未挿入）でのホルダーガイド機構側面図

【図12】カセットが記録再生可能位置にある位相でのカセットホルダー平面図

【図13】カセットホルダーガイド機構構成図

【図14】カセットホルダーガイド機構構成図

【図15】駆動機構の左側面サイドの構成図

【図16】ホルダーのガイド機構平面図

【図17】左右のメインラック板構成図

【図18】左右同期をとる駆動機構構成図

【図19】カセット未挿入でのS/Mホルダーガイド機構構成図

【図20】Mカセットとカセット押さえ機構及び補助押さえ機構の平面図

【図21】Mカセットとカセット押さえ機構及び補助押さえ機構の側面図

【図22】カセット挿入位置でのカセット押さえ機構と

補助押圧機構、ブラインド構成図

【図23】Mカセットの位置決め時の側面図

【図24】Lカセットとカセット押さえ機構、補助押さえ機構の平面図

【図25】Lカセットの位置決め時の側面図

【図26】大型カセットと小型カセットの高さ決めエリア平面図

【図27】大型カセットと小型カセットの平面図

【符号の説明】

101 Lカセット

101p 背面

102 Mカセット

103 Sカセット

119 ホルダー（カセットキャリア）

127 カセット押さえ機構（第1のカセット押さえ機構）

144 メインラック板（S）（駆動部材）

169 補助押さえ板

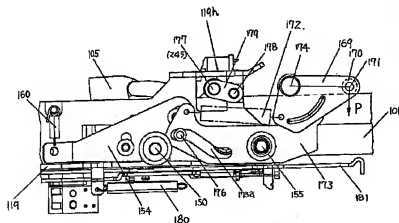
170 補助押さえローラ

173 補助押さえ基板

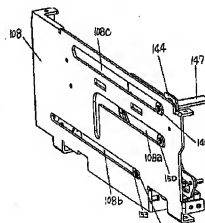
243 高さ受けピン（高さ決め部材）

246 補助押さえ機構（第2のカセット押さえ機構）

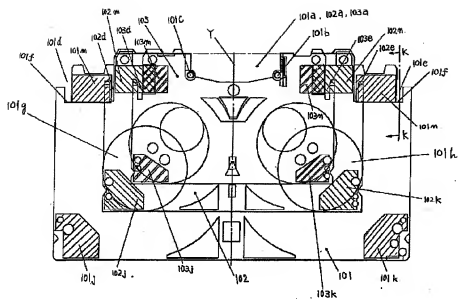
【図1】



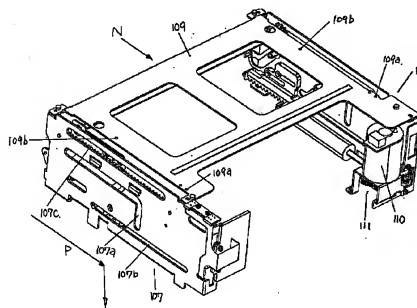
【図13】



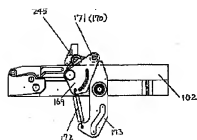
【図2】



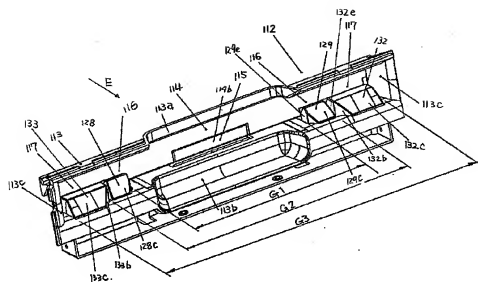
【図3】



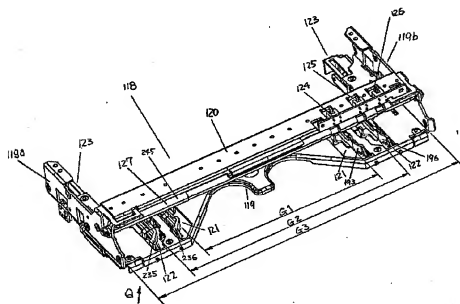
【図21】



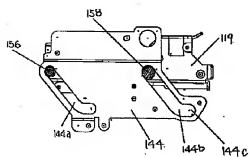
【図4】



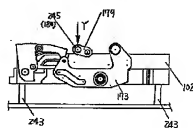
【図5】



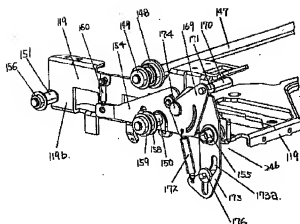
【図11】



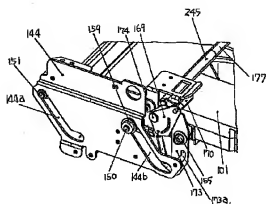
【図23】



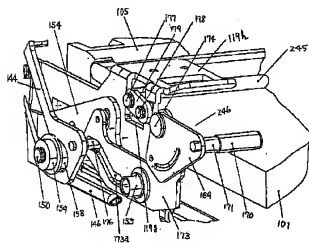
【图6】



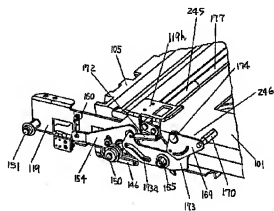
【图 7】



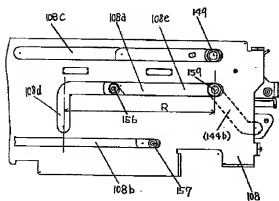
【图8】



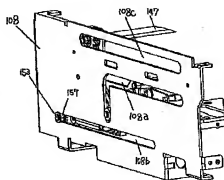
【图9】



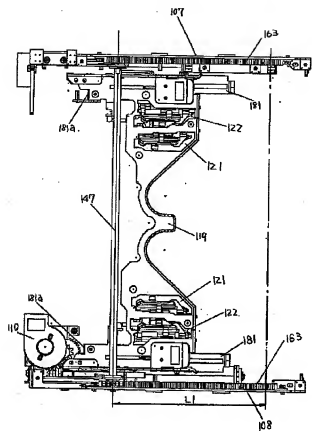
【图 10】



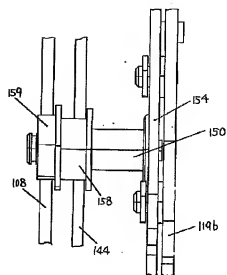
【图 1-4】



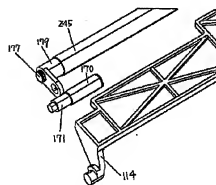
【図12】



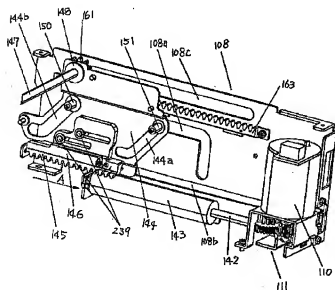
【図16】



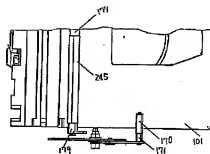
【図22】



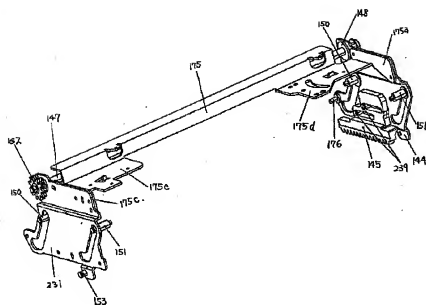
【図15】



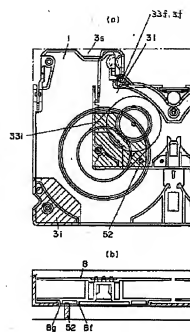
【図24】



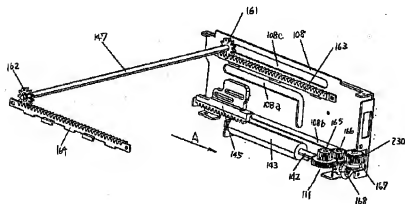
【図17】



【図26】

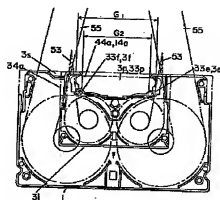
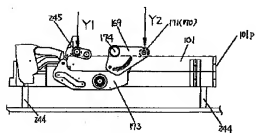


【図18】

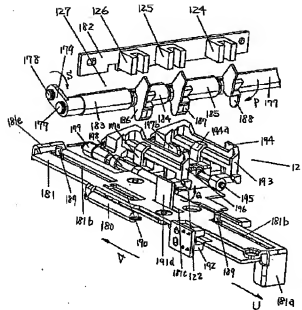


【図25】

【図27】



【図19】



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